

THE P-BLOCK ELEMENTS

CHEMISTRY

Single Correct Answer Type

- Nitric oxide is:
 - Acidic towards litmus
 - Basic towards litmus
 - Neutral towards litmus
 - Amphoteric
- The last member of inert gas family is:
 - Krypton
 - Radon
 - Xenon
 - Argon
- Helium -oxygen mixture is used by deep sea divers in preference to nitrogen oxygen mixture because
 - Helium is much less soluble in blood than nitrogen
 - Nitrogen is much less soluble in blood than helium
 - Due to high pressure deep under the sea nitrogen and oxygen react to give poisonous nitric oxide
 - Nitrogen is highly soluble in water
- Among the fluorides below, the one which does not exist is
 - CF_4
 - HeF_4
 - XeF_4
 - SF_4
- The percentage of nitrogen in air remains almost constant due to:
 - The fixation of nitrogen
 - The activity of symbiotic bacteria
 - The effect of lightening and bacteria
 - The nitrogen cycle in nature
- The metal which does not form ammonium nitrate by reaction with dilute nitric acid is
 - Al
 - Fe
 - Pb
 - Mg
- The following acids have been arranged in the order of decreasing acid strength. Identify the correct order
 $ClOH(I)$ $BrOH(II)$ $IOH(III)$
 - $I > II > III$
 - $II > I > III$
 - $III > II > I$
 - $I > III > II$
- H_2S exhibits:
 - Oxidizing properties
 - Reducing properties
 - Basic properties
 - None of these
- Liquid oxygen is:
 - Colourless
 - Pale yellow
 - Pale blue
 - Dark blue
- HNO_3 is manufactured by:
 - Birkeland and Eyde's process
 - Haber's process
 - Contact's process
 - Fischer-Tropsch's process
- The decreasing values of bond angles from NH_3 (107°) to SbH_3 (91°) down the group 15 of the periodic table is due to
 - Increasing $bp-bp$ repulsion
 - Increasing p -orbital character in sp^3
 - Decreasing $lp-bp$ repulsion
 - Decreasing electronegativity
- Nitrogen is obtained when $NaNO_2$ react with
 - NH_4Cl
 - NH_4NO_3
 - $(NH_4)_2CO_3$
 - NH_4OH
- Which of the following statement is wrong?
 - The stability of hydrides increases from NH_3 to BiH_3 in group 15 of the periodic table
 - Nitrogen cannot form $d\pi-p\pi$ bond
 - Single N—N bond is weaker than the single P—P bond
 - N_2O_4 has two resonance structure

14. Which is monoatomic?
 a) Oxygen b) Fluorine c) Neon d) Nitrogen
15. Which gas can be collected over water?
 a) NH_3 b) N_2 c) SO_2 d) HCl
16. In the reaction,
 $2\text{KI} + \text{H}_2\text{O}_2 + \text{O}_3 \rightarrow 2\text{KOH} + \text{O}_2 + A$, the compound A is:
 a) KIO_3 b) I_2O_5 c) HIO_3 d) I_2
17. In the reaction, $\text{MnO}_4^- + \text{I}^- \xrightarrow{\text{Alkaline solution}} [\text{X}]$; $[\text{X}]$ is:
 a) IO_3^- b) IO_4^- c) I_2 d) IO^-
18. Number of hydroxyl groups present in pyrosulphuric acid is:
 a) 3 b) 4 c) 2 d) 1
19. Which is not an acid salt?
 a) $\text{Na}_4\text{P}_2\text{O}_7$ b) NaH_2PO_3 c) NaH_2PO_2 d) $\text{Na}_3\text{HP}_2\text{O}_6$
20. In fisher-Ringe's method of separation of noble gas mixture from air, Is used.
 a) 90% CaC_2 +10% CaCl_2 b) Coconut charcoal
 c) Soda lime +potash solution d) 90% CaCO_3 +10% urea
21. The element which evolves two gases on reacting with conc. H_2SO_4 is:
 a) Si b) C c) S d) P
22. When conc. H_2SO_4 is added to dry KNO_3 , brown fumes are evolved. These fumes are of:
 a) SO_2 b) SO_3 c) N_2O d) NO_2
23. With cold and dilute sodium hydroxide fluorine reacts to give
 a) NaF and OF_2 b) $\text{NaF} + \text{O}_3$ c) O_2 and O_3 d) $\text{NaF} + \text{O}_2$
24. The $X-X$ bond dissociation energy is minimum in:
 a) F_2 b) Cl_2 c) Br_2 d) I_2
25. Which of the following is not the characteristic of interhalogen compounds?
 a) They are more reactive than halogens
 b) They are quite unstable but none of them is explosive
 c) They are covalent in nature
 d) They have low boiling points and are highly volatile
26. Which is soluble in water?
 a) AgCl b) AgBr c) AgI d) AgF
27. In the compounds of type $E\text{Cl}_3$, where $E = \text{B, P, As, or Bi}$, the angle $\text{Cl}-E-\text{Cl}$ for different E are in the order :
 a) $\text{B} > \text{P} = \text{As} = \text{Bi}$ b) $\text{B} > \text{P} > \text{As} > \text{Bi}$ c) $\text{B} < \text{P} = \text{As} = \text{Bi}$ d) $\text{B} < \text{P} < \text{As} < \text{Bi}$
28. Colour of iodine solution can be discharged by shaking it with aqueous solution of:
 a) H_2O_2 b) Sodium sulphide c) Sodium thiosulphate d) Sodium sulphate
29. Sulphuric acid has great affinity for water because
 a) It hydrolyses the acid b) It decomposes the acid
 c) Acid forms hydrates with water d) Acid decomposes water
30. Major credit for the discovery of noble gases is given to:
 a) Cavendish b) Ramsay c) Rayleigh d) None of these
31. In $\text{XeF}_2, \text{XeF}_4, \text{XeF}_6$, the number of lone pairs of Xe is respectively
 a) 3, 2, 1 b) 1, 2, 3 c) 2, 3, 1 d) 4, 1, 2
32. Which of the following has $pp-dp$ bonding?
 a) NO_3^-
 b) SO_3^{2-}
 c) BO_3^{3-}
 d) CO_3^{2-}
33. Acidified iodates are reduced to ... by SO_2 .
 a) Iodites b) Iodide c) Iodine d) None of these
34. Anhydron is:

- a) HClO_4
 b) HClO_3
 c) Anhydrous magnesium perchlorate
 d) Anhydrous calcium perchlorate
35. In Kipp's apparatus, H_2S is prepared:
 a) Continuously b) By $\text{FeS} + \text{conc. H}_2\text{SO}_4$ c) By $\text{FeS} + \text{dil. H}_2\text{SO}_4$ d) By $\text{Fe} + \text{dil. H}_2\text{SO}_4$
36. The mixture of conc. HCl and HNO_3 in the ratio 3: 1 contains:
 a) ClO_2 b) NOCl c) NCl_3 d) N_2O_4
37. Pure nitrogen can be prepared from
 a) NH_4OH b) NH_4NO_2 c) $\text{Ba}(\text{NO}_3)_2$ d) Ca_3N_2
38. Fluorine can be free from HF by passing the mixture through:
 a) H_2O b) An alkaline solution c) Conc. H_2SO_4 d) NaF
39. Fluorine is usually obtained from:
 a) Fluorspar b) Fluorapatite c) Cryolite d) Tetrafluoromethane
40. Mark the strongest acid
 a) HI b) HBr c) HCl d) HF
41. The most basic hydride is
 a) NH_3 b) PH_3 c) AsH_3 d) SbH_3
42. Cl_2 is used in the extraction of:
 a) Pt b) Au c) Both (a) and (b) d) None of these
43. A hydride of nitrogen having lowest oxidation number of N:
 a) NH_3 b) N_3H c) N_2H_4 d) N_2H_2
44. Chlorine acts as a bleaching agent only in presence of
 a) Dry air b) Moisture c) Sunlight d) Pure oxygen
45. Swimming pools are disinfected by bubbling through water with a controlled quantity of:
 a) Br_2 b) Cl_2 c) O_2 enriched air d) N_2
46. A glass tube containing molten antimony breaks upon solidification of antimony due to:
 a) Expansion b) Exothermic reaction c) Endothermic reaction d) None of these
47. Oxygen is paramagnetic. The unpaired electrons are present in :
 a) Antibonding orbitals b) Bonding orbitals c) p - orbitals d) f - orbitals
48. By warming a paste of bleaching powder with a solution of ammonia, we get:
 a) H_2 b) N_2 c) N_2O_3 d) N_2O_4
49. H_3PO_2 has the name and basicity respectively:
 a) Phosphorous acid and two
 b) Hypophosphorous acid and two
 c) Hypophosphoric acid and one
 d) Hypophosphoric acid and two
50. The correct order of acidic nature is:
 a) $\text{Cl}_2\text{O}_7 > \text{SO}_2 > \text{P}_4\text{O}_{10}$ b) $\text{CO}_2 > \text{N}_2\text{O}_5 > \text{SO}_3$ c) $\text{Na}_2\text{O} > \text{MgO} > \text{Al}_2\text{O}_3$ d) $\text{K}_2\text{O} > \text{CaO} > \text{MgO}$
51. The van der Waal's forces are the greatest in:
 a) Neon b) Argon c) Krypton d) Xenon
52. Starch paper moistened with KI solution turns blue in ozone because of:
 a) Iodine liberation
 b) Oxygen liberation
 c) Alkali formation
 d) Ozone reacts with litmus paper
53. Which one is correct statement?
 a) Basicity of H_3PO_4 and H_3PO_3 is 3 and 3 respectively
 b) Acidity of H_3PO_4 and H_3PO_3 is 3 and 3 respectively
 c) Acidity of H_3PO_4 and H_3PO_3 is 3 and 2 respectively
 d) Basicity of H_3PO_4 and H_3PO_3 is 3 and 2 respectively

54. Ammonia water is a good cleaning agent because it:
- Is weakly basic
 - Emulsifies grease
 - Leaves no residue when wiped out
 - All are true
55. A clathrate is defined as a:
- Cage compound
 - Liquid crystal
 - Mixture
 - Solid solution
56. The acid employed for etching of glass is
- HCl
 - HClO₄
 - HF
 - Aqua regia
57. H₂SO₄ reacts with sugar and acts as:
- A dehydrating agent
 - An oxidizing agent
 - A sulphonating agent
 - None of these
58. Ordinary oxygen contains:
- Only O¹⁶ isotope
 - Only O¹⁷ isotope
 - A mixture of O¹⁶, O¹⁷ and
 - Only O¹⁸ isotope
59. Metal halide which is insoluble in water is
- AgF
 - AgI
 - KBr
 - CaCl₂
60. Phosphine is:
- Basic
 - Acidic
 - Amphoteric
 - Neutral
61. Antimony dissolves in aquaregia to give:
- SbCl₃
 - Sb₂O₅
 - SbCl₅
 - Sb(NO₃)₃
62. Dinitrogen pentoxide a colourless solid is prepared by
- Heating NH₄NO₂ with an excess of oxygen
 - Dehydrating HNO₃ with CaO
 - Dehydrating HNO₃ with P₄O₁₀
 - Heating a mixture of HNO₂ and Ca(NO₃)₂
63. Ammonium compound not used as a fertilizer is:
- (NH₄)₂SO₄
 - (NH₄)₂CO₃
 - NH₄NO₃
 - CAN(calcium ammonium nitrate)
64. At ordinary temperature and pressure, among halogens, chlorine is a gas, bromine is a liquid and iodine is a solid. This is because:
- The specific heats are in the order Cl₂ > Br₂ > I₂
 - Intermolecular forces among molecules of chlorine are the weakest and those of iodine the strongest
 - The order of density is I₂ > Br₂ > Cl₂
 - The order of stability is I₂ > Br₂ > Cl₂
65. Sulphur forms the chlorides S₂Cl₂ and SCl₂. The equivalent mass of Sulphur in SCl₂ is 16 g/mol. Therefore, the equivalent mass of Sulphur in S₂Cl₂ is:
- 32 g/mol
 - 16 g/mol
 - 64 g/mol
 - 8 g/mol
66. Javelle water is:
- Aqueous solution of NaOCl
 - Used as bleaching agent
 - Both (a) and (b)
 - None of the above
67. The strongest acid is:
- H₃PO₂
 - H₃PO₃
 - H₄P₂O₇
 - H₃PO₄
68. Orthophosphoric acid on heating gives:
- Phosphine
 - Phosphorus pentoxide
 - Phosphorus acid
 - Metaphosphoric acid
69. Which oxide is more acidic?
- Al₂O₃
 - Na₂O
 - MgO
 - CaO

70. $\text{SO}_2 + \text{H}_2\text{S} \rightarrow$ product, the final product is
 a) H_2SO_3 b) H_2SO_4 c) $\text{H}_2\text{S}_2\text{O}_3$ d) $\text{H}_2\text{O} + \text{S}$
71. Which of the following is not oxidised by O_3 ?
 a) KI b) FeSO_4 c) KMnO_4 d) K_2MnO_4
72. The gas used for inflating the tyres of aeroplanes is:
 a) H_2 b) He c) N_2 d) Ar
73. F_2 is formed by the reaction of K_2MnF_6 with:
 a) SbF_5 b) MnF_3 c) KrF_6 d) MnF_4
74. Which statement is not correct for nitrogen?
 a) It has a small size b) It does not readily react with O_2
 c) It is a typical non-metal d) *d*-orbitals are available for bonding
75. Which is not oxidised by MnO_2 ?
 a) F b) Cl c) I₂ d) I
76. Passing H_2S gas through nitric acid produces:
 a) Rhombic sulphur b) Monoclinic sulphur c) Colloidal sulphur d) Plastic sulphur
77. Schweitzer's reagent is:
 a) $[\text{Cu}(\text{NH}_3)_4]\text{SO}_4$ b) $[\text{Ag}(\text{NH}_3)_2]\text{Cl}$ c) $[\text{Cu}(\text{NH}_3)_2]\text{Cl}$ d) $\text{K}_4\text{Fe}(\text{CN})_6$
78. Industrial name of $\text{H}_2\text{S}_2\text{O}_7$ is
 a) Pyrosulphuric acid b) Marshall's acid c) Oleum d) All of these
79. Which does not give oxygen on heating?
 a) HgO b) KMnO_4 c) KClO_3 d) $(\text{NH}_4)_2\text{Cr}_2\text{O}_7$
80. Which of the following pairs is obtained on heating ammonium dichromate?
 a) N_2 and H_2O b) N_2O and H_2O c) NO_2 and H_2O d) NO and NO_2
81. Which reaction is not feasible?
 a) $2\text{KI} + \text{Br}_2 \rightarrow 2\text{KBr} + \text{I}_2$ b) $2\text{KBr} + \text{I}_2 \rightarrow 2\text{KI} + \text{Br}_2$
 c) $2\text{KBr} + \text{Cl}_2 \rightarrow 2\text{KCl} + \text{Br}_2$ d) $2\text{H}_2\text{O} + 2\text{F}_2 \rightarrow 4\text{HF} + \text{O}_2$
82. The conjugate base of H_2PO_4^- is:
 a) HPO_4^{2-} b) P_2O_5 c) H_3PO_4 d) PO_4^{3-}
83. Reaction of solid KMnO_4 with conc. H_2SO_4 produces manganese heptoxide (Mn_2O_7) in:
 a) Solution state b) Solid state c) Fine powder d) None of these
84. Caro's acid is:
 a) $\text{H}_2\text{S}_2\text{O}_3$ b) $\text{H}_2\text{S}_2\text{O}_8$ c) H_2SO_3 d) H_2SO_5
85. Which of the following is not oxidized by MnO_2 ?
 a) F^- b) Cl^- c) Br^- d) I^-
86. Which is an ozonide?
 a) KO_3 b) NH_4O_3 c) Cr_2O_3 d) Both (a) and (b)
87. Which statement is false for ozone?
 a) It is obtained by silent electric discharge on oxygen
 b) It is an endothermic compound
 c) It can be obtained by the action of ultraviolet rays on oxygen
 d) It cannot be regarded as an allotrope of oxygen
88. Which is true with regard to the properties of PH_3 ?
 a) PH_3 is insoluble in water b) PH_3 has fishy smell
 c) PH_3 is neutral towards litmus d) PH_3 is not much stable
89. Nitric acid is generally light yellow due to the presence of:
 a) NH_3 b) NO c) NO_2 d) N_2O_5
90. The lightning bolts in atmosphere cause the formation of:
 a) NO b) O_3 c) CO_2 d) H_2O_2
91. The structure of IF_7 is:
 a) Square pyramid

- b) Trigonal bipyramid
 c) Octahedral
 d) Pentagonal bipyramid
92. What may be expected to happen, when phosphine gas is mixed with chlorine gas?
 a) PCl_5 and HCl are formed and the mixture cools down
 b) $\text{PH}_3 \cdot \text{Cl}_2$ is formed with warming up
 c) The mixture cools down only
 d) PH_3 and HCl are formed and the mixture warms up
93. $\text{HClO}_4 + \text{P}_2\text{O}_5 \rightarrow (A) \text{ and } (B)$ A and B are
 a) $\text{HClO}_3, \text{H}_3\text{PO}_4$ b) $\text{Cl}_2\text{O}_6 + \text{HPO}_3$ c) $\text{ClO}_2, \text{H}_2\text{PO}_4$ d) $\text{Cl}_2\text{O}_7, \text{HPO}_3$
94. The formula of zinc phosphite is:
 a) ZnHPO_3 b) $\text{Zn}(\text{PO}_4)_3$ c) $\text{Zn}_2(\text{PO}_4)_3$ d) $\text{Zn}_3(\text{PO}_3)_2$
95. The bonds present in N_2O_5 are:
 a) Only ionic
 b) Only covalent
 c) Covalent and coordinate
 d) Covalent and ionic
96. Uranium isotopes are usually separated by using compounds of the halogen:
 a) F_2 b) Cl_2 c) Br_2 d) I_2
97. Which of the following halogen oxides is ionic?
 a) I_4O_9 b) I_2O_5 c) BrO_2 d) ClO_3
98. Which gas is used to improve the atmosphere of crowded places?
 a) H_2 b) O_2 c) O_3 d) N_2O
99. Which of the following is responsible for depletion of the ozone layer in the upper strata of atmosphere?
 a) Polyhalogens b) Ferrocene c) Fullerenes d) Freons
100. H_2SO_4 and H_2SO_3 can be distinguished by the addition of:
 a) Litmus solution b) FeCl_3 solution c) NaHSO_4 solution d) Magnesium powder
101. $\text{NaNH}_2 + \text{N}_2\text{O} \rightarrow X + \text{NaOH} + \text{NH}_3$ what is the X?
 a) NaN_2 b) Na_3N c) NaN_3 d) None of these
102. Ripening of fruits can be carried out in presence of
 a) Na_2SO_4 b) NaCl c) CaC_2 d) CaCl_2
103. Which is most thermodynamically stable allotropic form of phosphorus?
 a) Red b) White c) Black d) Yellow
104. F_2 is isolated by:
 a) Electrolysis of HF
 b) Electrolysis of KHF_2
 c) Electrolysis of Na_3AlF_6
 d) Electrolysis of NaF/HF
105. Observe the following statements
 I. Bleaching powder is used in the preparation of chloroform.
 II. Bleaching powder decomposes in the presence of CoCl_2 to liberate O_2 .
 III. Aqueous KHF_2 is used in the preparation of fluorine.
 The correct combination is
 a) I, II and III are correct b) Only II is correct
 c) Only I and III are correct d) Only I and II are correct
106. Which form of P shows chemiluminescence?
 a) White P b) Black P c) Red P d) None of these
107. Which of the following oxy. acids of phosphorus is a reducing agent and monobasic?
 a) H_3PO_2 b) H_3PO_3 c) H_3PO_4 d) $\text{H}_4\text{P}_2\text{O}_6$
108. Radon is a noble gas. Its radioactivity is used in the treatment of:
 a) Typhoid b) Cancer c) Cough and cold d) Thyroid

109. Which of the following statement is true?
a) H_3PO_3 is a stronger acid than H_2SO_3
b) In aqueous medium HF is a stronger acid than HCl
c) HClO_4 is a weaker acid than HClO_3
d) HNO_3 is a stronger acid than HNO_2
110. Number of lone pairs of electrons on Xe atoms in XeF_2 , XeF_4 and XeO_3 molecule are respectively
a) 3, 2 and 1 b) 4, 3 and 2 c) 2, 3 and 1 d) 3, 2 and 0
111. When a lead storage battery is discharged:
a) SO_2 is evolved
b) Lead sulphate is consumed
c) Lead is formed
d) H_2SO_4 is consumed
112. On heating silver nitrate strongly is obtained finally:
a) NO_2 b) O_2 c) Silver metal d) All
113. Pure phosphine is not combustible while impure phosphine is combustible, this combustibility is due to the presence of:
a) P_2H_4 b) N_2 c) PH_5 d) P_2O_5
114. In the contact process of H_2SO_4 , SO_3 dissolves in sulphuric acid to give:
a) Permonosulphuric acid
b) Thiosulphuric acid
c) Pyrosulphuric acid
d) Perdisulphuric acid
115. When chlorine water is exposed to sunlight, O_2 is liberated. Hence:
a) Hydrogen has little affinity to O_2
b) Hydrogen has more affinity to O_2
c) Hydrogen has more affinity to chlorine
d) It is a reducing agent
116. The number of electrons in a halogen in its outermost orbit in comparison with corresponding noble gas is:
a) One electron less b) One electron more c) Two electrons less d) Two electrons more
117. The deep blue colour produced on adding excess of ammonia to copper sulphate solution is due to the presence of:
a) Cu^{2+} b) $[\text{Cu}(\text{NH}_3)_2]^{2+}$ c) $[\text{Cu}(\text{NH}_3)_4]^{2+}$ d) $[\text{Cu}(\text{NH}_3)_6]^{2+}$
118. Which of the following oxo-acids of chlorine is formed on shaking chlorine water with freshly precipitated yellow oxide of mercury?
a) HClO_3 b) HClO_2 c) HClO d) HClO_4
119. Phosphorus is present in bones as:
a) $\text{Ca}_3(\text{PO}_4)_2$ b) FePO_4 c) Ca_3P_2 d) Cu_3P_2
120. Paramagnetic molecule is:
a) Oxygen b) Nitrogen c) Hydrogen d) Chlorine
121. Which is a poison?
a) Hg_2Cl_2 b) As_2O_3 c) NaHCO_3 d) NaCl
122. Which of the following is a tribasic acid?
a) H_3PO_4 b) HPO_3 c) $\text{H}_4\text{P}_2\text{O}_7$ d) $\text{H}_4\text{P}_2\text{O}_6$
123. Presence of sulphide ion cannot be confirmed by:
a) BaCl_2 b) $(\text{CH}_3\text{COO})_2\text{Pb}$ c) Sodium nitroprusside d) Dil. H_2SO_4
124. End product of the hydrolysis of XeF_6 is
a) XeF_4O b) XeF_2O_2 c) XeO_3 d) XeO_3^-
125. In PO_4^{3-} ion, the formal charge on each oxygen atom and P—O bond order respectively are:
a) -0.75, 1.25 b) -3, 1.25 c) -0.75, 1.0 d) -0.75, 0.6

126. The lightest, non-inflammable gas is:
 a) H_2 b) He c) N_2 d) Ar
127. Which of the following chloride is water insoluble?
 a) HCl b) AgCl c) Both a and b d) None of the above
128. Which radical can bring about the highest oxidation state of a transition metal?
 a) F^- b) Cl^- c) Br^- d) I^-
129. Excess of PCl_5 reacts with conc. H_2SO_4 giving
 a) Chlorosulphonic acid b) Thionyl chloride
 c) Sulphuryl chloride d) Sulphurous acid
130. Conc. H_2SO_4 displaces HCl from sodium chloride because:
 a) Conc. H_2SO_4 is stronger than HCl
 b) HCl is a gas whereas H_2SO_4 is a liquid
 c) Sulphates are more soluble in water than chlorides
 d) Sulphates are less soluble in water than chlorides
131. Which of the following halogens can replace others from their salt solutions?
 a) I_2 b) Br_2 c) F_2 d) Cl_2
132. When a mixture of SO_2 and O_2 is passed over the reaction rate increases:
 a) Fe + Mo b) $ZnO + Cr_2O_3$ c) V_2O_5 d) zymase
133. Metal reacts with Sulphur to give:
 a) Sulphide b) Sulphite c) Sulphate d) Thiosulphate
134. The non-metal other than graphite having metallic lustre is:
 a) I_2 b) Si c) Cl_2 d) Br_2
135. Ozone turns benzidine paper:
 a) Violet b) Brown c) Blue d) Red
136. Bleaching powder is obtained by the interaction of Cl_2 with a:
 a) Dilute solution of $Ca(OH)_2$ b) Concentrated solution of $Ca(OH)_2$ c) Dry CaO d) Dry slaked lime
137. Which statement is incorrect?
 a) Chlorine can bleach a wet piece of cloth
 b) Iodine stain can be removed by hypo solution
 c) Bromine can be prepared from carnallite
 d) Bromine is liberated when iodine is passed through an acidified KBr solution
138. The bond Br—Cl is:
 a) Polar b) Non-polar c) True covalent d) Coordinate
139. Which element is extracted commercially by the electrolysis of an aqueous solutions of one of its compounds?
 a) Sodium b) Aluminium c) Chlorine d) Bromine
140. CN^- ion and N_2 are isoelectronic but in contrast to CN^- , N_2 is chemically inert because of:
 a) Low bond energy
 b) Absence of bond polarity
 c) Unsymmetrical electron distribution
 d) Presence of more number of electrons in bonding orbitals
141. Which of the following gases exists more abundantly in nature than the others?
 a) Helium b) Neon c) Argon d) Krypton
142. Which inert gas has the highest boiling point?
 a) Xe b) Kr c) Ar d) Ne
143. Which characteristic is not correct about H_2SO_4 ?
 a) Reducing agent b) Oxidizing agent c) Sulphonating agent d) Highly viscous
144. XeF_4 exists as under ordinary atmospheric conditions.
 a) Solid b) Liquid c) Gas d) None of these
145. A gas, that relights glowing splinter, is
 a) H_2 b) O_2 c) N_2 d) NO_2

146. The percentage of *p*-character in the orbitals forming P-P bond in P₄ is
 a) 25 b) 33 c) 50 d) 75
147. Fermi's salt is:
 a) HF b) KHF₂ c) NaCl d) KClO₃
148. Which among the following factors is the most important in making fluorine the strongest oxidizing agent?
 a) Electron affinity b) Ionisation enthalpy
 c) Hydration enthalpy d) Bond dissociation energy
149. Halogens are:
 a) Gases under ordinary conditions
 b) Electronegative in nature
 c) Fuming liquids
 d) The gases found in atmosphere
150. Hydrogen sulphide reacts with lead acetate forming a black compound which reacts with H₂O₂ to form another compound. The colour of the compound is:
 a) Black b) Yellow c) White d) pink
151. KF combines with HF to form KHF₂. The compound contains the species
 a) K⁺, F⁻ and H⁺ b) K⁺, F⁻ and HF c) K⁺ and [HF₂]⁻ d) [KHF]⁺ and F₂
152. Which compound does not give NH₃ on heating?
 a) (NH₄)₂SO₄ b) (NH₄)₂CO₃ c) NH₄NO₂ d) NH₄Cl
153. When conc. H₂SO₄ is distilled with P₄O₁₀, the product formed is:
 a) SO₂ b) S₂O₄ c) SO₃ d) S₂O₃
154. Radon was discovered by:
 a) Dorn b) Ramsay c) Rayleigh d) None of these
155. The general formula of hypophosphorous acid is:
 a) $\begin{array}{c} \text{O} \\ \parallel \\ \text{H}-\text{P}-\text{OH} \\ | \\ \text{H} \end{array}$ b) $\begin{array}{c} \text{O} \\ \parallel \\ \text{H}-\text{P}-\text{OH} \\ | \\ \text{OH} \end{array}$ c) $\begin{array}{c} \text{O} \\ \parallel \\ \text{HO}-\text{P}-\text{OH} \\ | \\ \text{OH} \end{array}$ d) $\begin{array}{c} \text{O} \\ \parallel \\ \text{HO}-\text{P}-\text{COOH} \\ | \\ \text{OH} \end{array}$
156. Ammonia on catalytic oxidation gives an oxide from which nitric acid is obtained. The oxide is:
 a) NO b) NO₂ c) N₂O₃ d) N₂O₅
157. Which oxide reacts with both HCl and NaOH?
 a) CO₂ b) CaO c) ZnO d) N₂O₅
158. O₂ is denser than air and therefore it is collected in:
 a) Spirit b) H₂O c) Mercury d) Kerosene
159. The structural formula of hypophosphorus acid is
 a) $\begin{array}{c} \text{O} \\ \parallel \\ \text{H}-\text{P}-\text{OH} \\ | \\ \text{H} \end{array}$ b) $\begin{array}{c} \text{O} \\ \parallel \\ \text{H}-\text{P}-\text{OH} \\ | \\ \text{OH} \end{array}$ c) $\begin{array}{c} \text{O} \\ \parallel \\ \text{H}-\text{P}-\text{OH} \\ | \\ \text{H} \end{array}$ d) $\begin{array}{c} \text{O} \\ \parallel \\ \text{HO}-\text{P}-\text{OH} \\ | \\ \text{OH} \end{array}$
160. Which compound is prepared by the following reaction?

$$\text{Xe} + 2\text{F}_2 \xrightarrow[673\text{K, 5-6 atm}]{\text{Ni vessel}} \text{XeF}_2$$
 (1:5 volume ratio)
 a) XeF₂ b) XeF₆ c) XeF₄ d) XeOF₂
161. Which one of the following oxides of nitrogen dimerises into a colourless solid /liquid on cooling?
 a) N₂O b) NO c) N₂O₃ d) NO₂
162. Which ion cannot be precipitated from water?
 a) Cl⁻ b) NO₃⁻ c) SO₄²⁻ d) All of these
163. The correct order of solubility in water for He, Ne, Ar, Kr, Xe is
 a) Xe > Kr > Ar > Ne > He b) Ar > Ne > He > Kr > Xe
 c) He > Ne > Ar > Kr > Xe d) Ne > Ar > Kr > He > Xe
164. Ozone acts as:

- a) An oxidizing agent b) A reducing agent c) Bleaching agent d) All of these
165. Correct order of reactivity
 a) $I_2 > Br_2 > Cl_2 > F_2$ b) $Br_2 > I_2 > Cl_2 > F_2$ c) $Cl_2 > Br_2 > I_2 > F_2$ d) $F_2 > Cl_2 > Br_2 > I_2$
166. On boiling an aqueous solution of $KClO_3$ with iodine the product formed is:
 a) KIO_3 b) $KClO_4$ c) KIO_4 d) KCl
167. When bleaching powder is treated with carbon dioxide:
 a) Chlorine is evolved
 b) Calcium chloride is formed
 c) No reaction occurs
 d) It absorbs the gas
168. Which of the following properties does not correspond to the order?
 $HI < HBr < HCl < HF$
 a) Thermal stability b) Reducing power c) Ionic character d) Dipole moment
169. ClO_2 is an anhydride of:
 a) Chlorous acid ($HClO_2$)
 b) Chloric acid ($HClO_3$)
 c) Mixed anhydride of $HClO_2$ and $HClO_3$
 d) None of the above
170. Red P can be obtained by white P by
 a) Heating it with a catalyst in an inert atmosphere b) Distilling it in an inert atmosphere
 c) Dissolving it in CS_2 and crystallising d) Melting it and pouring the liquid into water
171. In the halogen group chlorine is a gas, bromine is a liquid and iodine exists as solid crystals. Then the next halogen astatine (At) would be:
 a) Solid at room temperature
 b) Having higher electronegativity
 c) Solid with higher IP
 d) Least atomic size
172. A solution of chlorine in water contains:
 a) $HOCl$ only
 b) HCl only
 c) HCl and $HOCl$
 d) HCl , $HOCl$ and chlorine
173. Helium gives a characteristic spectrum with:
 a) Orange and red lines b) Orange lines c) Yellow lines d) Green lines
174. Molecules of a noble gas do not possess vibrational energy because a noble gas
 a) Is monoatomic b) Is chemically inert
 c) Has completely filled shells d) Is diamagnetic
175. H_2S is far more volatile than water because:
 a) Sulphur atom is more electronegative than oxygen atom
 b) Oxygen atom is more electronegative than sulphur atom
 c) H_2O has bond angle of nearly 105°
 d) Hydrogen is loosely bonded with sulphur
176. Holme's signals can be given by using
 a) $CaC_2 + CaCO_3$ b) $CaC_2 + CaCN_2$ c) $CaC_2 + Ca_3P_2$ d) $Ca_3P_2 + CaCN_2$
177. Atomicity of sulphur in rhombic sulphur is
 a) 8 b) 2 c) 4 d) 6
178. When chlorine is passed through concentrated solution of KOH , the compound formed is
 a) $KClO_4$ b) $KClO_3$ c) $KClO_2$ d) $KClO$
179. The dipole moment of NF_3 is less than NH_3 because:
 a) F is more reactive than H
 b) NH_3 forms associated molecules

- c) The resultant of the bond polarity is less
d) The resultant of the individual polarities is opposed by the polarity of lone pair
180. Which of the following oxides of nitrogen is the anhydride of nitrous acid?
a) NO b) N₂O₄ c) N₂O₃ d) N₂O₅
181. Aqueous solution of Na₂S₂O₃ on reaction with Cl₂ gives:
a) Na₂S₄O₆ b) NaHSO₄ c) NaCl d) NaOH
182. Halogen molecules are:
a) Monoatomic and form X₂²⁻ ions
b) Diatomic and form X⁻ ions
c) Diatomic and form X₂²⁻ ions
d) Monoatomic and form X⁻ ions
183. Least stable oxide of chlorine is
a) Cl₂O b) ClO₂ c) Cl₂O₇ d) ClO₃
184. Bromine water is decolourised by:
a) SO₂ b) C₂H₄ c) C₂H₂ d) All of these
185. Fluorine reacts with water to give
a) HF, O₂ and O₃ b) HF and F₂ c) HF and O₂ d) HF and O₃
186. The electronic configurations of four elements are given below. Which element does not belong to the same family as others?
a) [Xe]4f¹⁰, 5d¹⁰, 6s² b) [Kr]4d¹⁰, 5s² c) [Ne]3s², 3p⁵ d) [Ar]3d¹⁰, 4s²
187. Among the noble gases, xenon reacts with fluorine to give stable xenon fluorides because
a) It has highest ionisation energy b) It has lowest ionisation energy
c) Its size is largest d) It is the most readily available gas
188. Which of the following is most volatile?
a) HF b) HCl c) HBr d) HI
189. Which phosphorus reacts with KOH solution to produce phosphine gas?
a) White phosphorus b) Red phosphorus c) Both a and b d) None of these
190. In the treatment of leukaemia..... is used.
a) White phosphorus b) Red phosphorus c) Scarlet phosphorus d) P³² isotope
191. Argon was discovered by:
a) Cavendish b) Lavoisier c) Rayleigh d) Thomson
192. Among K, Ca, Fe and Zn, the element which can form more than one binary compound with chlorine is
a) Fe b) Zn c) K d) Ca
193. Red P is used in making:
a) Air freshners
b) Red plastics
c) Red dyes for plastics
d) Safety match-striking surface
194. On heating (NH₄)₂Cr₂O₇, the gas evolved is 'X'. The same gas is obtained by heating:
a) NH₄NO₂ b) NH₄NO₃ c) Mg₃N₂ + H₂O d) Na₂O₂ + H₂O
195. Ozone with KI solution produces
a) IO₃ b) I₂ c) Cl₂ d) HI
196. Ammonium nitrate decomposes on heating into
a) Ammonia and nitric acid b) Nitrous oxide and water
c) Nitrogen, hydrogen and ozone d) Nitric oxide, nitrogen dioxide and hydrogen
197. What is a product obtained in the reaction of HgCl₂ and Hg(CN)₂?
a) (CN)₂ b) Hg(CN)Cl
c) Hg[Hg(CN)₂Cl₂] d) Addition compound HgCl₂ · Hg(CN)₂
198. In order to prevent the hot metal filament from getting burnt, when the electric current is switched on, the bulb is filled with:

- a) CH₄ b) An inert gas c) CO₂ d) Cl₂
199. Which of the following is incorrect?
 a) O₂ is weaker oxidant than O₃ b) O₂ has larger bond length than O₃ c) Both O₂ and O₃ are paramagnetic d) O₂ is linear and O₃ are isosceles
200. Which of the following has —O—O— linkage?
 a) H₂S₂O₆ b) H₂S₂O₈ c) H₂S₂O₃ d) H₂S₄O₆
201. Which of the following is a metalloid?
 a) N b) Bi c) As d) P
202. The weakest acid is
 a) HI b) HBr c) HCl d) HF
203. In the preparation of H₂SO₄:
 a) SO₂ is dissolved in H₂SO₄
 b) SO₂ is dissolved in water
 c) SO₃ is dissolved in conc. H₂SO₄
 d) SO₃ is dissolved in dilute H₂SO₄
204. Which element is most metallic?
 a) Phosphorus b) Arsenic c) Antimony d) Bismuth
205. Concentrated nitric acid reacts with iodine to give:
 a) HI b) HOI c) HOIO₂ d) HOIO₃
206. Electron affinity for a noble gas is approximately equal to:
 a) That of halogens
 b) Zero
 c) That of oxygen family
 d) That of nitrogen family
207. Ozonization of water is carried out to remove:
 a) Bacterial impurities
 b) Bad taste
 c) Excess of chlorine present
 d) Calcium and magnesium salt present in it
208. Welding of magnesium can be done in an atmosphere of
 a) Xe b) He c) Kr d) Ne
209. Which noble gas is not found in atmosphere?
 a) Rn b) Kr c) Ne d) Ar
210. Which of the following is not oxidised by O₃?
 a) KI b) FeSO₄ c) KMnO₄ d) K₂MnO₄
211. The m. p. and b. p. is lowest for:
 a) He b) Ne c) Xe d) Ar
212. The reaction of the type 2X₂ + S → SX₄, is shown by sulphur when X is
 a) Fluorine or chlorine b) Chlorine only
 c) Chlorine and bromine only d) F, Cl, Br, all
213. Chlorine, bromine and iodine are placed in the seventh group of the periodic table because:
 a) They are non-metals
 b) They are electronegative
 c) They have seven electrons in the outermost shells of their atoms
 d) They are generally univalent
214. Nitric acid whether diluted or concentrated:
 a) Reacts with Al to give H₂
 b) Reacts with Al to give NO₂
 c) Reacts with Al to give NH₄NO₃
 d) Hardly affects Al
215. NH₃ can be collected by the displacement of:
 a) Mercury b) Water c) Brine d) Conc. H₂SO₄

216. The number of p -electrons in bromine atom is:
a) 17 b) 7 c) 15 d) 12
217. Which species has the largest dipole moment?
a) NH_3 b) PH_3 c) AsH_3 d) SbH_3
218. A gas reacts with CaO , but not with NaHCO_3 . The gas is:
a) CO_2 b) Cl_2 c) N_2 d) O_2
219. Nitrogen can be purified from the impurities of oxides of nitrogen and ammonia by passing through:
a) conc. HCl
b) Alkaline solution of pyrogallol
c) A solution of $\text{K}_2\text{Cr}_2\text{O}_7$ acidified with H_2SO_4
d) A solution of KOH (*aq.*)
220. Which statement is correct?
a) Noble gases are not found in nature
b) Some compounds of noble gas elements are known
c) Atmospheric air is free from noble gases
d) None of the above
221. Calcium phosphide is:
a) Ca_3P b) Ca_3P_2 c) Ca_2P_3 d) CaP_2
222. Which of the following inert gas liquefies easily?
a) He b) Kr c) Ne d) Ar
223. Compounds containing coordinate bonds is:
a) O_3 b) SO_3 c) H_2SO_4 d) All of these
224. When Cl_2 water is added to an aqueous solution of potassium halide in presence of chloroform a violet colour is obtained. On adding more of Cl_2 water, the violet colour disappears and a colourless solution is obtained. This test confirms the presence of the following in aqueous solution:
a) Iodide b) Bromide c) Chloride d) Iodide and bromide
225. Which forms strong $p\pi - p\pi$ bonds?
a) N b) As c) P d) Bi
226. In OF_2 molecule, the total number of bond pairs and lone pairs of electrons present respectively are:
a) 2, 6
b) 2, 8
c) 2, 10
d) 2, 9
227. Nitric acid may be kept in a bottle of:
a) Ag b) Sn c) Pb d) Al
228. The vapour density of NH_4Cl is almost half the expected value because it:
a) Is salt of a strong acid
b) Sublimes on heating
c) Dissociates completely
d) None of the above
229. The least stable hydride of 15th group elements is
a) NH_3 b) PH_3 c) AsH_3 d) BiH_3
230. Which of the light effective in the formation of chlorophyll?
a) Sodium lamp b) Neon lamp c) Mercury lamp d) Argon lamp
231. Which of the following is an explosive compound?
a) XeOF_4 b) XeOF_2 c) XeF_2 d) XeO_3
232. The most abundant element in the earth crust is
a) O b) Si c) H d) C
233. Blasting of TNT is done by mixing it with:
a) NH_4Cl b) NH_4NO_3 c) NH_4NO_2 d) $(\text{NH}_4)_2\text{SO}_4$

234. Man dies, when nitrous oxide is inhaled in large quantities because it:
- Is poisonous
 - Causes laughing hysteria
 - Decomposes haemoglobin
 - Reacts with organic tissues
235. The chemical used for cooling in refrigerator is
- NH_4Cl
 - NH_4OH
 - liquid NH_3
 - CO_2
236. SO_2 can act as strong oxidizing agent in:
- Acidic medium
 - Basic medium
 - Neutral medium
 - None of these
237. Nitrogen gas is absorbed by:
- Aluminium carbide
 - Calcium carbide
 - Ferrous sulphate
 - Calcium hydroxide
238. The reaction $3\text{ClO}^- (\text{aq.}) \rightarrow \text{ClO}_3^- + 2\text{Cl}^- (\text{aq.})$ is an example of :
- Oxidation reaction
 - Reduction reaction
 - Disproportionation reaction
 - Decomposition reaction
239. liberates oxygen from water.
- P
 - Na
 - F_2
 - I_2
240. The hydroxide of which metal is soluble in excess of ammonia:
- Cr
 - Cu
 - Fe
 - Bi
241. The formation of $\text{O}_2^+[\text{PtF}_6]^-$ is the basis for the formation of xenon fluorides. This is because
- O_2 and Xe have comparable sizes
 - Both O_2 and Xe are gases
 - O_2 and Xe have comparable ionisation energies
 - Both a and c
242. In nitrogen family the $\text{H}-\text{M}-\text{H}$ bond angle in the hydrides MH_3 gradually becomes closer to 90° on going from N to Sb. This shows that gradually:
- The basic strength of the hydrides increases
 - Almost pure p -orbitals are used for $\text{M}-\text{H}$ bonding
 - The bond energies of $\text{M}-\text{H}$ bond increase
 - The bond pairs of electrons become farther apart from the central atom
243. Sequence of acidic character is:
- $\text{SO}_2 > \text{CO}_2 > \text{CO} > \text{N}_2\text{O}_5$
 - $\text{SO}_2 > \text{N}_2\text{O}_5 > \text{CO} > \text{CO}_2$
 - $\text{N}_2\text{O}_5 > \text{SO}_2 > \text{CO} > \text{CO}_2$
 - $\text{N}_2\text{O}_5 > \text{SO}_2 > \text{CO}_2 > \text{CO}$
244. Phosphorus is manufactured by heating in a furnace.
- Bone-ash, sodium chloride and coke
 - Bone-ash, silica and coke
 - Bone-ash, silica and lime
 - Bone-ash, coke and limestone
245. Which oxide of nitrogen is coloured gas?
- N_2O
 - NO_2
 - N_2O_5
 - NO
246. In KI solution, I_2 readily dissolves and forms
- I^-
 - KI_2^-
 - KI_3
 - KI_2
247. Consider the following compounds
- Sulphur dioxide
Hydrogen peroxide
Ozone
- Among these compounds identify those that can act as bleaching agent.
- 1 and 3
 - 2 and 3
 - 1 and 2
 - 1,2 and 3

248. Different allotropic forms of sulphur differ in:
 a) Crystalline structure b) Molecular weight c) Chemical properties d) Chemical structure
249. Monoatomic element of nitrogen family is:
 a) Bismuth b) Phosphorus c) Antimony d) None of these
250. Which noble gas was first of all detected in solar chromosphere?
 a) Helium b) Neon c) Argon d) Krypton
251. The acid used in lead storage battery is:
 a) Nitric acid b) Sulphuric acid c) Hydrochloric acid d) Phosphoric acid
252. Halogen used in the preparation of insecticides is:
 a) I₂ b) Cl₂ c) Br₂ d) F₂
253. Which halogen acid is a liquid?
 a) HF b) HCl c) HBr d) HI
254. Halon-1301 is
 a) CCl₂F · CClF₂ b) C₂F₄Br₂ c) CCl₃F d) CF₃Br
255. Skin turns yellow in contact with conc. HNO₃, because:
 a) Proteins are converted into xanthoproteins
 b) Water is removed by the acid
 c) Skin gets burnt
 d) Nitrocellulose is formed
256. The pair of species having identical shape for molecules of both species is
 a) XeF₂, IF₂⁻ b) BF₃, NH₃ c) CF₄, SF₄ d) PCl₅, ICl₅
257. Which of the following pairs are correctly matched?

1.haber process	Manufacture of ammonia
2.le-blanc process	Manufacture of sulphuric acid
3.birkeland -Eyed process	Manufacture of nitric acid
4. solvay process	Manufacture of sodium carbonate

Select the correct answer using the codes given below

- a) 2,3 and 4 b) 1,2,3,and 4 c) 1,2and 4 d) 1,3and 4
258. Which molecule does not possess distorted geometry?
 a) Cl—F b) IF₃ c) IF₅ d) IF₇
259. Iodine displaces chlorine from which one of the compounds?
 a) KCl b) CaCl₂ c) CCl₄ d) KClO₃
260. Which member of oxygen family has the highest catenation ability?
 a) Oxygen b) Sulphur c) Selenium d) Tellurium
261. When heated NH₃ is passed over CuO gas evolved is
 a) N₂ b) N₂O c) HNO₃ d) NO₂
262. The noble gas used in the preparation of first noble gas compound was:
 a) Xe b) He c) Cr d) Rn
263. P₂O₅ is used extensively as a:
 a) Dehydrating agent b) Catalytic agent c) Reducing agent d) Preservative
264. Oxygen differs from sulphur in:
 a) Allotropy
 b) Formation of ions
 c) Number of electrons in the outermost orbit
 d) Nature of hydrides
265. Which of the following salt would give SO₂ with hot and dil.H₂SO₄ and also decolourises Br₂ water?
 a) Na₂ SO₃ b) NaHSO₄ c) Na₂ SO₄ d) Na₂S
266. On heating ammonium dichromate, the gas evolved is:
 a) Oxygen b) Ammonia c) Nitrogen d) Nitric oxide
267. Regular use of which of the following fertilizers increases the acidity of soil?
 a) KNO₃

- b) NH_2CONH_2
 c) $(\text{NH}_4)_2\text{SO}_4$
 d) Superphosphate of lime
268. The halogen showing maximum coordination number of sulphur in SX_n halides is
 a) Cl b) Br c) F d) I
269. BCl_3 is a planar molecule whereas NCl_3 is pyramidal because:
 a) BCl_3 has no lone pair of electrons but NCl_3 has a lone pair of electrons
 b) B—Cl bond is more polar than N—Cl bond
 c) Nitrogen atom is smaller than boron atom
 d) N—Cl bond is more covalent than B—Cl bond
270. The bond angle in Cl_2O molecule is:
 a) 180° b) 105° c) 90° d) 111°
271. Mark the wrong statement. Halogens are all coloured.
 a) This is due to absorption of visible light by their molecules resulting in the excitation of outer electrons to higher energy levels
 b) The small F_2 molecules absorb high energy violet radiation and appear yellow
 c) Large I_2 molecule absorb low energy yellow and green radiations and appear violet in colour
 d) The excitation energy required by the small fluorine atoms is smaller than required by the large iodine atom
272. Which reaction can be used to prepare phosphoric acid?
 a) $\text{P}_2\text{O}_3 + \text{H}_2\text{O} \xrightarrow{20^\circ\text{C}}$ b) $\text{P}_2\text{O}_3 + \text{H}_2\text{O} \xrightarrow{80^\circ\text{C}}$ c) $\text{P}_2\text{O}_3 + \text{H}_2\text{O} \xrightarrow{25^\circ\text{C}}$ d) $\text{P} + \text{conc. HNO}_3 \rightarrow$
273. Which gas is filled in electric bulbs/tubes?
 a) O_2 b) N_2 c) Ar d) He
274. Iodine is formed when potassium iodide reacts with a solution of
 a) ZnSO_4 b) CuSO_4 c) $(\text{NH}_4)_2\text{SO}_4$ d) Na_2SO_4
275. The interatomic distances in H_2 and Cl_2 molecules are 74 and 198 pm respectively. The bond length of HCl is:
 a) 272 pm b) 136 pm c) 124 pm d) 248 pm
276. Mg on heating to redness in an atmosphere of N_2 and then on treating with H_2O gives:
 a) NH_3 b) H_2 c) N_2 d) O_2
277. The bleaching action of bleaching powder is due to
 a) Nascent hydrogen b) Nascent oxygen c) Nascent chlorine d) None of these
278. In the preparation of O_2 from KClO_3 , MnO_2 acts as:
 a) Activator b) Catalyst c) Oxidizing agent d) Dehydrating agent
279. Which noble gas has highest and least polarisability respectively?
 a) He, Xe b) Ne, Kr c) Kr, Ne d) Xe, He
280. Nitrolim, a nitrogenous fertilizer, is:
 a) Ca_3H_2 b) $\text{Ca}(\text{CN})_2$ c) CaCN_2 d) $\text{CaCN}_2 + \text{C}$
281. H_2S cannot be dried by passing over conc. H_2SO_4 because:
 a) The acid oxidises it
 b) The acid combines with H_2S to form a salt
 c) Both form complex
 d) It dissolves in the acid
282. The chemical name of bleaching powder is:
 a) Calcium chloro hypochlorite
 b) Calcium hypochlorite
 c) Calcium chlorate
 d) Calcium perchlorate
283. The following are some statements related to VA group hydrides
 I. Reducing property Increases from NH_3 to BiH_3

II. Tendency to donate lone pair decreases from NH_3 to BiH_3

III. Thermal stability of hydrides decreases from NH_3 to BiH_3

IV. Bond angle of hydrides decreases from NH_3 to BiH_3

The correct statements are

- a) I, II, III and IV b) I, III and IV c) I, II, IV d) I and IV
284. The deficiency of iodine in diet causes
a) Rickets b) Night blindness c) Beri -beri d) Goitre
285. The number of P – O – P bonds in cyclic metaphosphoric acid is
a) Zero b) Three c) Two d) Four
286. Which noble gas is more soluble in water?
a) He b) Ar c) Ne d) Xe
287. An important method of fixation of atmospheric N_2 is:
a) Fischer-Tropsch's process
b) Haber's process
c) Frasch's process
d) Solvay's process
288. Which statement about noble gases is not correct?
a) Xe forms XeF_6
b) Ar is used in electric bulbs
c) Kr is obtained during radioactive disintegration
d) He has the lowest b. p. among all the noble gases
289. Noble gases are group of elements which exhibit very
a) High chemical activity b) Much paramagnetic properties
c) Minimum electronegativity d) Low chemical activity
290. On passing H_2S through acidified FeCl_3 solution, FeCl_3 is converted into:
a) FeCl_2 b) $\text{Fe}_2(\text{SO}_4)_3$ c) FeS d) FeSO_4
291. $\text{HPO}_3 + \text{H}_2\text{O} \xrightarrow{\text{Heat}}$? The product is:
a) $\text{H}_4\text{P}_2\text{O}_7$ b) H_3PO_3 c) H_3PO_4 d) P_2O_5
292. Ozone reacts with:
a) C_2H_4 b) C_2H_2 c) C_6H_6 d) All of these
293. The inert gas abundantly found in atmosphere is
a) Xe b) Kr c) He d) Ar
294. When SO_2 gas is passed through cupric chloride solution:
a) The solution becomes colourless
b) A white precipitate is formed
c) No change takes place
d) Solution becomes colourless and a white precipitate is formed
295. The reaction of chlorine with CO in the presence of sunlight gives:
a) COCl_2 b) CO_2Cl_2 c) HOCl d) $\text{H}_2\text{Cl}_2\text{O}_2$
296. The mixture of noble gases is separated by:
a) Ramsay-Rayleigh's first method
b) Ramsay-Rayleigh's second method
c) Fischer and Ringe's method
d) Dewar's coconut charcoal adsorption method
297. The boiling points of halogens increase with increase in molecular weight, it is because:
a) As the size increases molecules undergo association leading to higher stability
b) Bond strength increases due to increase in electronegativity
c) Van der Waals' forces increase with increase in number of electrons per mole
d) None of the above
298. NCl_3 on hydrolysis yields:

- a) N₂ and NOCl b) NO and HCl c) NH₃ and HOCl d) N₂O and NH₃
299. The strongest oxidizing agent is:
 a) H₃PO₄ b) HNO₃ c) H₃PO₃ d) HNO₂
300. Increasing order of acid strengths of hydrogen halides is:
 a) HF < HCl < HBr < HI
 b) HCl < HI < HBr < HF
 c) HCl < HBr < HI < HF
 d) None of these
301. Noble gases are sparingly soluble in water due to
 a) Dipole-dipole interaction b) Dipole-induced dipole interaction
 c) Induced dipole-induced dipole interaction d) Hydrogen bonding
302. Oxidation state exhibited by sulphur
 a) +6 b) +4 c) 0 d) All of these
303. Low volatile nature of H₂SO₄ is due to:
 a) Hydrogen bonding b) Van der Waals' forces c) Strong bonds d) None of these
304. When Na₂S is added to sodium nitroprusside solution:
 a) Beautiful violet colour is produced
 b) A complex [Fe(CN)₅NOS]⁴⁻ is formed
 c) The complex Na₄[Fe(CN)₅NOS] is formed
 d) All of the above
305. The reaction,

$$2\text{SO}_2 + \text{O}_2 + 2\text{H}_2\text{O} \rightarrow 2\text{H}_2\text{SO}_4$$
 is an example of :
 a) Synthesis of H₂SO₄
 b) Analysis of H₂SO₄
 c) Displacement reaction
 d) Double decomposition
306. The gases absorbed by alkaline pyrogallol and oil of turpentine respectively are:
 a) O₃, CH₄ b) O₂, O₃ c) SO₂, CH₄ d) N₂O, O₃
307. Ozone turns tetramethyl base paper:
 a) Green b) Violet c) Red d) Black
308. A student accidentally splashes few drops of conc H₂SO₄ on his cotton shirt, after a while, the splashed parts blacken and holes appear. This is happened because sulphuric acid
 a) Dehydrates the cotton with burning b) Causes the cotton react with air
 c) Heats up the cotton d) Removes the elements of water from cotton
309. Aquaregia is a mixture of:
 a) 3HCl + HNO₃ b) 3HNO₃ + HCl c) H₃PO₄ + H₂SO₄ d) HCl + CH₃COOH
310. The bond angle in H₂S is:
 a) 109°28' b) 104°51' c) 120° d) 92.5°
311. In the manufacture of sulphuric acid by contact process, tyndall box is used to
 a) Filter dust particles b) Remove impurities
 c) Convert SO₂ to SO₃ d) Test the presence of dust particles
312. The oxide insoluble in water is:
 a) TeO₂ b) SO₂ c) PoO₂ d) SeO₂
313. Which indicates the common laboratory method for the preparation of chlorine?
 a) $4\text{HCl} + \text{O}_2 \rightarrow 2\text{H}_2\text{O} + 2\text{Cl}_2$
 b) $2\text{NaCl} + 2\text{H}_2\text{O} \rightarrow 2\text{NaOH} + \text{H}_2 + \text{Cl}_2$
 c) $\text{MnO}_2 + 4\text{HCl} \rightarrow \text{MnCl}_2 + \text{Cl} + 2\text{H}_2\text{O}$
 d) $2\text{Mg}_2\text{OCl}_2 + \text{O}_2 \rightarrow 4\text{MgO} + 2\text{Cl}_2$
314. The geometry of XeF₆ is

- a) Tetrahedral
c) Octahedral
- b) Pentagonal bipyramidal
d) Square planar
315. Chlorine acts as a bleaching agent only in presence of
a) Dry air b) Moisture c) Sunlight d) Pure oxygen
316. Which one of the following pentafluorides cannot be formed?
a) PF_5 b) AsF_5 c) SbF_5 d) BiF_5
317. SO_2 oxidises:
a) Mg b) $\text{K}_2\text{Cr}_2\text{O}_7$ c) KMnO_4 d) All of these
318. Which of the following has highest proton affinity?
a) NH_3 b) PH_3 c) H_2O d) H_2S
319. Nuclear fusion produces:
a) Argon b) Deuterium c) Helium d) Krypton
320. Concentrated hydrochloric acid when kept in open air sometimes produces a cloud of white fumes. The explanation for it is that
a) Concentrated hydrochloric acid emits strongly smelling HCl gas all the time
b) Oxygen in air reacts with the emitted HCl gas to form a cloud of chlorine gas
c) Strong affinity of HCl gas for moisture in air results in forming of droplets of liquid solution which appears like a cloudy smoke.
d) Due to strong affinity for water, concentrated hydrochloric acid pulls moisture of air towards itself. This moisture forms droplets of water and hence the cloud.
321. In the dewar's method of separation of noble gases, the mixture of noble gases is kept in contact with coconut charcoal at 173 K. Which one of the following gaseous mixtures is not adsorbed on to the charcoal?
a) Ar, Kr b) Xe, Ar c) He, Ne d) Xe, Kr
322. The type of hybrid orbitals used by chlorine atom in ClO_2^- is
a) sp b) sp^2 c) sp^3 d) None of these
323. The oxidation state of N is highest in:
a) N_3H
b) NH_3
c) N_2H_4
d) NH_2OH
324. Formula of rhombic Sulphur is:
a) S_2 b) S c) S_4 d) S_8
325. The noble gases are unreactive because they:
a) Have the same number of electrons
b) Have an atomicity of one
c) Are gases with low densities
d) Have stable electronic configuration or closed valency shell
326. Phosphine reacts with copper sulphate solution to form:
a) Copper b) Copper phosphide c) Copper phosphate d) Copper phosphite
327. Desiccant is
a) Anhydrous $\text{Ba}(\text{ClO}_4)_2$ b) Anhydrous CaCl_2
c) Anhydrous $\text{Mg}(\text{ClO}_4)_2$ d) Conc H_2SO_4
328. Who among the following first prepared a stable compound of noble gas?
a) Neil Bartlett b) Reyleigh c) Ramsay d) Rutherford
329. On exposure to light electrical conductivity of selenium:
a) Increases
b) Decreases
c) Remains same
d) First decreases then increases

330. For H_3PO_3 and H_3PO_4 the correct choice is
 a) H_3PO_3 is dibasic and reducing
 b) H_3PO_3 is dibasic and non-reducing
 c) H_3PO_3 is tribasic and reducing
 d) H_3PO_3 is tribasic and non-reducing
331. When chlorine reacts with dil. NaOH under cold conditions, the oxidation state of chlorine changes from zero to
 a) -1 and +5
 b) +1 and +4
 c) +5 and +3
 d) -1 and +1
332. Yellow ammonium sulphide is:
 a) $(\text{NH}_4)_2\text{S}$
 b) $(\text{NH}_4)_2\text{S}_x$
 c) $(\text{NH}_4)_2\text{S}_8$
 d) $(\text{NH}_4)_2\text{S}_4$
333. Sulphuric acid is used:
 a) In lead storage batteries
 b) As a dehydrating agent
 c) In making fertilizers
 d) All of the above
334. Hydrolysis of NCl_3 gives NH_3 and X which of the following is X?
 a) HClO_4
 b) HClO_3
 c) HOCl
 d) HClO_2
335. How many lone pairs are associated with xenon atom in XeF_2 , SeF_4 and XeF_6 respectively?
 a) 1, 2 and 3
 b) 2, 3 and 1
 c) 3, 2 and 1
 d) 4, 3 and 2
336. Nitrous oxide
 a) Is an acidic oxide
 b) Is a mixed oxide
 c) Support the combustion of sulphur
 d) Highly soluble in hot water
337. The number of unpaired electrons in the *p*-subshell of oxygen atom is
 a) 1
 b) 2
 c) 3
 d) 4
338. $(\text{NH}_4)_2\text{Cr}_2\text{O}_7$ on heating liberates a gas. The same gas will be obtained by
 a) Heating NH_4NO_3
 b) Heating NH_4NO_2
 c) Treating H_2O_2 with NaNO_2
 d) Treating Mg_3N_2 with H_2O
339. Fluorapatite is a mineral of:
 a) F_2
 b) Br_2
 c) P
 d) As
340. Least malleable and ductile metal is:
 a) Au
 b) Ag
 c) Ni
 d) Bi
341. Which of the following is not correct?

$$3\text{O}_2 \xrightleftharpoons[\text{discharge}]{\text{Silent electric}} 2\text{O}_3$$
 a) $\Delta H = -284.5\text{KJ}$
 b) Ozone undergoes addition reaction with unsaturated carbon compounds
 c) Sodium thiosulphate reacts with I_2 to form sodium tetrathionate and sodium iodide.
 d) Ozone oxidises lead sulphide to lead sulphate
342. Laughing gas is prepared by heating
 a) NH_4Cl
 b) NH_4NO_3
 c) $\text{NH}_4\text{Cl} + \text{NaNO}_3$
 d) $(\text{NH}_4)_2\text{SO}_4$
343. A certain element forms a solid oxide which when dissolved in water forms an acidic solution. The element is:
 a) Neon
 b) Sodium
 c) Phosphorus
 d) sulphur
344. NO_2 cannot be obtained by heating :
 a) KNO_3
 b) $\text{Pb}(\text{NO}_3)_2$
 c) $\text{Cu}(\text{NO}_3)_2$
 d) AgNO_3
345. The product obtained by heating $(\text{NH}_4)_2\text{SO}_4$ and KCNO is
 a) Ammonia
 b) Ammonium cyanide
 c) Urea
 d) Hydrocyanic acid
346. The silver halide, which is least soluble in NH_4OH , is:
 a) AgF
 b) AgCl
 c) AgBr
 d) AgI
347. Fermings salt is
 a) HF
 b) KHF_2
 c) NOCl
 d) KClO_3
348. H_3PO_3 is

349. Correct order of decreasing thermal stability is as

a) $\text{NH}_3 > \text{PH}_3 > \text{AsH}_3 > \text{SbH}_3$
 b) $\text{PH}_3 > \text{NH}_3 > \text{AsH}_3 > \text{SbH}_3$
 c) $\text{AsH}_3 > \text{PH}_3 > \text{NH}_3 > \text{SbH}_3$
 d) $\text{SbH}_3 > \text{AsH}_3 > \text{PH}_3 > \text{NH}_3$

350. Most electropositive halogen is:

a) F
 b) Cl
 c) Br
 d) I

351. Argon is used

a) In filling airships
 b) To obtain low temperature
 c) In high temperature welding
 d) In radiotherapy for treatment of cancer

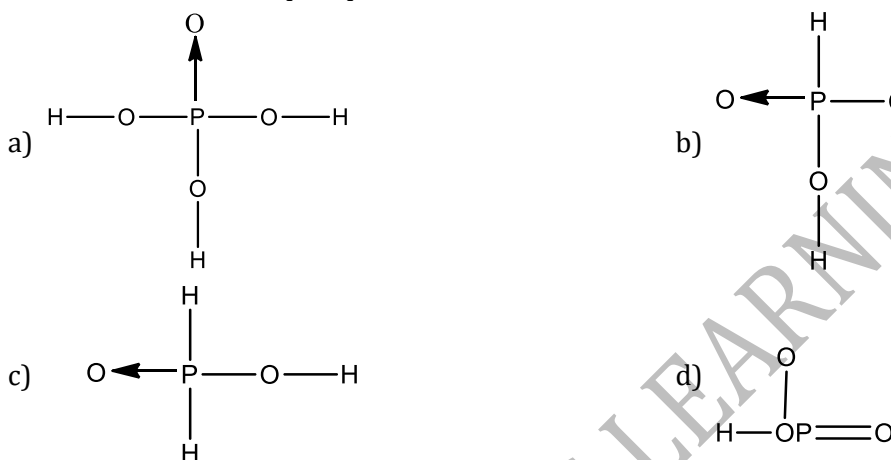
352. K_2CS_3 can be called potassium:

a) Sulphocyanide
 b) Thiocarbide
 c) Thiocarbonate
 d) Thiocyanate

353. Which of the following has S—S bond

a) $\text{H}_2\text{S}_2\text{O}_6$
 b) $\text{H}_2\text{S}_2\text{O}_7$
 c) $\text{H}_2\text{S}_2\text{O}_8$
 d) Mustard gas

354. The structure of orthophosphoric acid is



355. Bleaching action of chlorine is due to:

a) Reduction
 b) Oxidation
 c) Chlorination
 d) Hydrogenation

356. In clathrates of xenon with water, the nature of bonding between xenon and water molecule is

a) Dipole induced dipole interaction
 b) Coordinate
 c) Hydrogen bonding
 d) Covalent

357. Asthma patients use a mixture of.....for respiration.

a) O_2 and H_2
 b) O_2 and He
 c) O_2 and Ar
 d) O_2 and Ne

358. When ammonium nitrate is heated at 250°C the gas evolved is

a) N_2
 b) NH_3
 c) N_2O_3
 d) N_2O

359. Fluorine gas is stored in:

a) Copper vessels
 b) Steel vessels
 c) Both (a) and (b)
 d) None of these

360. Conc. HNO_3 reacts with iron to:

a) Render iron passive
 b) Give ferrous nitrate and nitric oxide
 c) Give ferric nitrate and ammonium nitrate
 d) Give ferric nitrate and nitrogen dioxide

361. Which one of the following statements is not true?

a) Among halide ions, iodine is the most powerful reducing agent
 b) Fluorine is the only halogen that does not show variable oxidation state
 c) HOCl is stronger acid than HOBr
 d) HF is a stronger acid than HCl

362. In nitroprusside ion, the iron and NO exist as Fe^{II} and NO^+ rather than Fe^{III} and NO . These forms can be differentiated by:

a) Estimating the concentration of iron
 b) Measuring the concentration of CN^-

- c) Measuring the solid state magnetic moment
d) Thermally decomposing the compound
363. The colourless gas liberated by passing excess of chlorine through NH_3 gas is:
a) NCl_3 b) HCl c) N_2 d) H_2
364. The basicity of H_3PO_4 is
a) 2 b) 3 c) 4 d) 5
365. A radioactive element resembling iodine in properties is:
a) Astatine b) Lead c) Radium d) Thorium
366. Which of the following form of interhalogen compounds does not exist?
a) IF_7 b) ClF_3 c) ICl d) BrCl_7
367. Which one is true peroxide?
a) NO_2 b) MnO_2 c) BaO_2 d) SO_2
368. When a colourless gas is passed through bromine water, decolourization takes place. The gas is:
a) HCl b) HBr c) H_2S d) SO_2
369. In case of nitrogen, NCl_3 is possible but not NCl_5 while in case of phosphorus, PCl_3 as well as PCl_5 are possible. It is due to
a) Lower electronegativity of P but not in N
b) Lower tendency of H bond formation in P than N
c) Availability of vacant *d*-orbital in P but not in N
d) Occurrence of P in solid while N in gaseous state at room temperature
370. The bonds present in pernitric acid are:
a) Ionic bonds
b) Covalent bonds
c) Semipolar bonds or dative bonds
d) Coordinate and covalent bonds
371. In which of these processes platinum is used as a catalyst?
a) Oxidation of ammonia to form HNO_3 b) Hardening of oils
c) Production of synthetic rubber d) Synthesis of methanol
372. D_3 line observed in the yellow region of the sun's spectrum is due to
a) Na b) Ne c) Kr d) He
373. A greenish yellow gas reacts with an alkali metal hydroxide to form a halate which can be used in fireworks and safety matches. The gas and halate respectively are:
a) $\text{Br}_2, \text{KBrO}_3$ b) $\text{Cl}_2, \text{KClO}_3$ c) $\text{I}_2, \text{NaIO}_3$ d) $\text{Cl}_2, \text{NaClO}_3$
374. Correct statement about white phosphorus is:
a) It ignites at 240°C b) It is violet-red solid c) It is not poisonous d) It ignites at 30°C
375. Ammonia reacts with excess of chlorine to form:
a) N_2 and NH_4Cl b) NCl_3 and HCl c) NH_4Cl and NCl_3 d) N_2 and HCl
376. The noble gas which can diffuse through rubber and glass easily is
a) Xe b) Ne c) Ar d) He
377. Ozone depletes due to the formation of following compound
a) Acrolein b) Chlorine nitrate c) Peroxy acetyl nitrate d) SO_2 and SO_3
378. A substance which gives a yellow precipitate when boiled with an excess of nitric acid and ammonium molybdate and red precipitate with AgNO_3 is
a) Orthophosphate b) Pyrophosphate c) Metaphosphate d) Hypophosphate
379. Nitrous acid reacts with H_2SO_4 to give:
a) $\text{NO}_2 + \text{SO}_2$ b) $\text{NO} + \text{SO}_2$ c) $\text{NO} + \text{SO}_3$ d) None of these
380. Among the properties (a) reducing, (b) oxidising and (c) complexing, the set of properties shown by CN^- ion towards metal species is:
a) a, b, c b) b, c c) c, a d) a, b
381. Sea-weeds are important sources of:
a) Iron b) Chlorine c) Iodine d) Bromine

382. CAN pellets are coated with calcium silicate because:
 a) CAN is explosive b) CAN is hygroscopic c) CAN is water soluble d) None of these
383. Yellow phosphorus is kept in:
 a) Water b) Ether c) Alcohol d) Kerosene
384. F_2 combines with all non-metals directly except:
 a) N_2 b) P c) Xe d) Kr
385. Which one of the following has lowest bond dissociation energy?
 a) Cl—Cl b) F—F c) Br—Br d) I—I
386. Ozone reacts with moist iodine giving:
 a) HIO_3 b) I_4O_9 c) IO_5 d) I_2O_5
387. On heating sodium as well as sulphur can be melted. Molten sodium and molten sulphur are used as:
 a) Medium for extracting metals
 b) Catalysts
 c) Metal refiners
 d) Electrodes in batteries
388. Oxidation of metals by HNO_3 does not depend on:
 a) Nature of metal b) Conc. of HNO_3 c) Temperature d) Catalyst
389. In froth floatation process for the purification of ores, the particles of ore float because
 a) Their surface is not easily wetted by water b) They are light
 c) They are insoluble d) They bear electrostatic charge
390. XeF_6 on complete hydrolysis gives:
 a) XeO_3 b) XeO c) XeO_2 d) Xe
391. The zero group members are collectively known as:
 a) Inert gases b) Rare gases c) Noble gases d) All of these
392. How many lone pair of electrons are present on Xe in $XeOF_4$?
 a) 1 b) 2 c) 3 d) 4
393. Hypophosphorous acid, H_3PO_2 is
 a) A monobasic acid b) A Tribasic acid c) A Dibasic acid d) Not acidic at all
394. The ionization potential of X^- ion is equal to:
 a) The electron affinity of X atom
 b) The electronegativity of X atom
 c) The ionization potential of X atom
 d) None of the above
395. Which oxide of chlorine is most powerful oxidizing agent?
 a) Cl_2O b) ClO_2 c) Cl_2O_6 d) Cl_2O_7
396. In Ostwald process of manufacturing of HNO_3 catalyst used is
 a) MO b) Fe c) Mn d) Pt
397. In the reaction,
 $HNO_3 + P_4O_{10} \rightarrow 4HPO_3 + X$
 the product X is
 a) N_2O_3 b) N_2O_5 c) NO_2 d) H_2O
398. Given are H_3PO_2 , H_3PO_3 , H_3PO_4 and $H_4P_2O_7$. which of the above oxoacids results into two series of salts?
 a) H_3PO_2 b) H_3PO_3 c) H_3PO_4 d) $H_4P_2O_7$
399. Which of the following is a mixed anhydride?
 a) NO b) NO_2 c) N_2O_5 d) N_2O
400. Pure N_2 can be obtained by:
 a) Heating barium azide b) NH_3 and CuO c) Both (a) and (b) d) None of these
401. Sulphur trioxide is dissolved in heavy water to form a compound X. The hybridisation of sulphur in X is
 a) sp^2 b) sp^3 c) sp d) dsp^2
402. What happens to the colour of litmus paper when a drop of H_2SO_4 is added to it?
 a) It turns red to blue b) It turns blue to red c) It gets destroyed d) It is unaffected

403. Which noble gas does not form clathrates?
 a) Xe b) Kr c) He d) Ar
404. Strongest reducing agent is:
 a) H_2O b) H_2S c) H_2Se d) H_2Te
405. Most abundant element in earth's crust is:
 a) O b) Se c) S d) Te
406. Which reaction yields the greatest quantity of chlorine from a given quantity of hydrochloric acid?
 a) Warming conc. HCl with MnO_2
 b) Warming conc. HCl with PbO_2
 c) Mixing conc. HCl with KMnO_4
 d) Treating bleaching powder with HCl
407. Superphosphate of lime is
 a) A mixture of normal calcium phosphate and gypsum
 b) A mixture of primary calcium phosphate and gypsum
 c) Normal calcium phosphate
 d) Soluble calcium phosphate
408. In Birkeland and Eyde process, the temperature of the electric arc is about:
 a) 1500°C b) 4000°C c) 3000°C d) 2000°C
409. Sulphides of which element are not precipitated in acidic or alkaline medium?
 a) K b) Ca c) Al d) All of these
410. Select the correct statement.
 a) Sodium metal is stored under kerosene
 b) One of the oxides of carbon is a basic oxide
 c) Metals can form only basic oxides
 d) To prevent combination of white phosphorus with oxygen it is kept in kerosene
411. SO_2 is dried by:
 a) CuO b) HNO_3 c) P_2O_5 d) Anhyd. CaCl_2
412. When Zn reacts with very dilute nitric acid it produces?
 a) NO b) NH_4NO_3 c) NO_2 d) H_2
413. The geometry of H_2S and its dipole moment are:
 a) Angular and non-zero b) Angular and zero c) Linear and zero d) Linear and non-zero
414. Graham's salt is:
 a) Sodium aluminosilicate
 b) Sodium hexametaphosphate
 c) Ferrous ammonium sulphate
 d) Potassium chromium sulphate
415. Yellow oils of sulphur is/are
 a) H_2S b) $\text{H}_2\text{S}_1, \text{H}_2\text{S}_3$ c) H_2SO_4 d) $\text{CS}_2, \text{NH}_2\text{CSNH}_2$
416. In the atmosphere N_2 is present as element with O_2 because:
 a) N_2 is more reactive
 b) N_2 is inert
 c) N_2 does not react with O_2
 d) N_2 is actively participating in the reaction
417. Percentage of argon in air is about:
 a) 10 per cent
 b) 0.1 per cent
 c) Much less than 0.1 per cent
 d) 1 per cent
418. Select the incorrect statement among the following
 a) O_3 is used as germicide for purification of air.
 b) In O_3 , O—O bond length is identical with that of molecular oxygen

- d) Bent T, $sp^3 d$
434. The anhydride of pyrosulphuric acid is:
 a) SO_2 b) S_2O_3 c) SO_3 d) S_2O_7
435. Which one is strongest oxidizing agent?
 a) $HClO$ b) $HClO_2$ c) $HClO_3$ d) $HClO_4$
436. Which is not an oxo-acid of chlorine?
 a) $HClO$ b) $HClO_2$ c) $HClO_3$ d) $HClO_5$
437. A greenish-yellow coloured gas is liberated on heating a mixture of two substances which are:
 a) $KBr + HCl$ b) $KI + HCl$ c) $MnO_2 + HCl$ d) $NaCl + H_2SO_4$
438. What are the products obtained when ammonia is reacted with excess chlorine?
 a) N_2 and NCl_3 b) N_2 and HCl c) N_2 and NH_4Cl d) NCl_3 and HCl
439. PH_3 produces smoky rings when it comes in contact with air. This is because:
 a) It is inflammable
 b) It combines with water vapours
 c) It combines with nitrogen
 d) It contains impurity of P_2H_4
440. The least stable anion of oxo-acids of chlorine is
 a) ClO^- b) ClO_2^- c) ClO_3^- d) ClO_4^-
441. Among H_2O , H_2S , H_2Se and H_2Te , the one with highest boiling point is:
 a) H_2O because of H-bonding
 b) H_2Te because of high mol. wt.
 c) H_2S because of H-bonding
 d) H_2Se because of low mol. wt.
442. Non-combustible hydride is:
 a) PH_3 b) AsH_3 c) SbH_3 d) NH_3
443. In H_3PO_3 :
 a) Each hydrogen atom is attached to oxygen atom
 b) Two hydrogen atoms are attached to oxygen atoms
 c) One atom of H is attached to oxygen atom
 d) None of the above
444. In the known interhalogen compounds the maximum number of halogen atoms is:
 a) 4 b) 5 c) 7 d) 8
445. Which of the following is the life saving mixture for an asthma patient?
 a) Mixture of helium and oxygen b) Mixture of neon and oxygen
 c) Mixture of xenon and nitrogen d) Mixture of argon and oxygen
446. Which species is not known?
 a) XeF_6 b) XeF_4 c) XeO_3 d) KrF_6
447. The reaction of the type $2X_2 + S \rightarrow SX_4$, is shown by sulphur when X is
 a) Fluorine or chlorine b) Chlorine only
 c) Chlorine and bromine only d) F, Cl Br all
448. Oxygen reacts with each of the following elements readily, except:
 a) P b) Na c) S d) Cl
449. Cane sugar reacts with concentrated HNO_3 to give:
 a) CO_2 and H_2O b) Oxalic acid c) Carbonic acid d) CO and H_2O
450. Phosgene is the name of:
 a) A phosphorus compound
 b) A phosphonium compound
 c) Carbonyl chloride
 d) Phosphorus halide
451. H_2S is not a/an

- a) Reducing agent b) Acidic c) Oxidising agent d) None of these
452. The idea which prompted Bartlett to prepare first ever compound of noble gas was:
- a) High bond energy of Xe—F
 b) Low bond energy of F—F in F₂
 c) Ionization energies of O₂ and xenon were almost similar
 d) None of the above
453. Which of the following statements regarding sulphur is incorrect?
- a) SO₂ molecule is paramagnetic.
 b) The vapour at 200°C consists mostly of S₈ rings.
 c) At 600 C the gas mainly consists of S₂ molecules.
 d) The oxidation state of sulphur is never less than +4 in its compounds.
454. Which of the following is a solid in nature?
- a) N₂O₃ b) N₂O c) NO d) N₂O₅
455. On heating copper nitrate strongly is finally obtained.
- a) Copper b) Copper oxide c) Copper nitrite d) Copper nitride
456. Which of the following dissolves in water but does not give any oxyacid solution?
- a) SO₂ b) OF₂ c) SCl₄ d) SO₃
457. The colour of I₂ is violet because it:
- a) Absorbs violet light
 b) Does not absorb light
 c) Absorbs yellow and green light
 d) None of the above
458. Compounds formed when the noble gases get entrapped in the cavities of crystal lattices of certain organic and inorganic compounds are known as:
- a) Interstitial compounds
 b) Clathrates
 c) Hydrates
 d) Picrates
459. The mineral cleveite on heating gives:
- a) He b) Xe c) Ar d) Ra
460. Bromine can be liberated from potassium bromide solution by:
- a) Iodine solution b) Chlorine water c) Sodium chloride d) Potassium iodide
461. Which element is not considered as 'chalcogens'?
- a) Selenium b) Oxygen c) Sulphur d) Polonium
462. When lead nitrate is heated it produces
- a) NO₂ b) NO c) N₂O₅ d) N₂O
463. Which is the most easily liquefiable rare gas?
- a) Xe b) Kr c) Ar d) Ne
464. The outermost electronic configuration of group 15 or VA elements is:
- a) ns^2np^1 b) ns^2np^2 c) ns^2np^3 d) ns^2np^4
465. The noble gas used in atomic reactor ,is
- a) Krypton b) Oxygen c) Neon d) Helium
466. Atom that requires high energy of excitation is:
- a) F b) Cl c) Br d) I
467. In modern process phosphorus is manufactured by:
- a) Heating a mixture of phosphorite mineral with sand and coke in electric furnace
 b) Heating calcium phosphate with coke
 c) Heating bone-ash with coke
 d) Heating the phosphate mineral with sand
468. Which property is most important in making fluorine the strongest oxidising halogen?

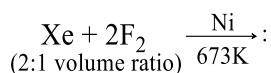
- a) Bond dissociation energy
 b) Ionisation enthalpy
 c) Hydration enthalpy
 d) Electron affinity
469. Which has maximum vapour pressure or most volatile or low b.p.?
 a) HCl b) HI c) HF d) HBr
470. Amphoteric oxide is:
 a) Sb_4O_6 b) N_2O_5 c) Bi_2O_3 d) Na_2O
471. Bone black is polymorphic form of
 a) Phosphorus b) Sulphur c) Carbon d) Nitrogen
472. In which case, the order of acidic strength is not correct?
 a) $\text{HI} > \text{HBr} > \text{HCl}$ b) $\text{HIO}_4 > \text{HBrO}_4 > \text{HClO}_4$
 c) $\text{HClO}_4 > \text{HClO}_3 > \text{HClO}_2$ d) $\text{HF} > \text{H}_2\text{O} > \text{NH}_3$
473. Which compound does not has S—S bond?
 a) $\text{Na}_2\text{S}_2\text{O}_4$ b) $\text{Na}_2\text{S}_4\text{O}_6$ c) $\text{Na}_2\text{S}_2\text{O}_3$ d) $\text{Na}_2\text{S}_2\text{O}_7$
474. The chamber acid contains H_2SO_4 .
 a) 10.20% b) 35.45% c) 67.80% d) 82.90%
475. Compound of Sulphur used in electrical transformer is:
 a) SO_2 b) H_2S c) SO_3 d) SF_6
476. The inert gases producing maximum number of compounds are
 a) He and Ne b) Ar and Ne c) Kr and Ne d) Ar and Xe
477. The fertilizer named 'Nitrolim' is prepared by the use of :
 a) $\text{CaO} + \text{N}_2$ b) $\text{CaC} + \text{N}_2$ c) $\text{CaC}_2 + \text{N}$ d) $\text{CaC}_2 + \text{N}_2$
478. When KBr is treated with concentrated H_2SO_4 reddish brown gas is evolved. The gas is
 a) Bromine b) HCl
 c) Mixture of bromine and HBr d) None of the above
479. Sulphur trioxide can be obtained by which of the following reaction:
 a) $\text{S} + \text{H}_2\text{SO}_4 \xrightarrow{\Delta}$ b) $\text{H}_2\text{SO}_4 + \text{PCl}_5 \xrightarrow{\Delta}$ c) $\text{CaSO}_4 + \text{C} \xrightarrow{\Delta}$ d) $\text{Fe}_2(\text{SO}_4)_3 \xrightarrow{\Delta}$
480. The metallic form of phosphorus is:
 a) White P b) Red P c) β -black P d) α -black P
481. The atomic weight of noble gases is obtained by using the relationship:
 a) Atomic weight = equivalent weight \times valency
 b) Atomic weight = equivalent weight/valency
 c) Atomic weight = $\frac{\text{Valency}}{\text{Equivalent weight}}$
 d) $2 \times \text{VD} = \text{molecular weight} = \text{atomic weight}$
482. When HNO_3 reacts with metals, nitrogen dioxide is usually evolved if the acid is:
 a) Dilute b) Very dilute c) Moderately strong d) Concentrated
483. Which one of the following reaction of xenon compounds is not feasible?
 a) $\text{XeO}_3 + 6\text{HF} \rightarrow \text{XeF}_6 + 3\text{H}_2\text{O}$
 b) $3\text{XeF}_4 + 6\text{H}_2\text{O} \rightarrow 2\text{Xe} + \text{XeO}_3 + 12\text{HF} + 1.5\text{O}_2$
 c) $2\text{XeF}_2 + 2\text{H}_2\text{O} \rightarrow 2\text{Xe} + 4\text{HF} + \text{O}_2$
 d) $\text{XeF}_6 + \text{RbF} \rightarrow \text{Rb}[\text{XeF}_7]$
484. Fixation of nitrogen means:
 a) Reaction of nitrogen with oxygen
 b) Conversion of free atmospheric nitrogen into nitrogen compounds
 c) Decomposition of nitrogenous compounds to yield free nitrogen
 d) The action of denitrifying bacteria on nitrogen compounds
485. One mole of fluorine is reacted with two moles of hot and concentrated KOH. The products formed are KF, H_2O and O_2 . The molar ratio of KF, H_2O and O_2 respectively is:
 a) 1 : 1 : 2 b) 2 : 1 : 0.5 c) 1 : 2 : 1 d) 2 : 1 : 2

486. Slow acting nitrogenous fertilizer among the following is
 a) NH_2CONH_2 b) NH_4NO_3 c) CaNCN d) KNO_3
487. Liquor ammonia is
 a) Ammonium hydroxide b) Liquefied ammonia gas
 c) Concentrated solution of NH_3 in water d) A solution of NH_3 in alcohol
488. In ramsay and rayleigh's isolation of noble gases from air, the nitrogen of the air is finally converted into
 a) NaNO_2 Only b) NO and NO_2 c) NaNO_3 Only d) NaNO_2 and NaNO_3
489. Superphosphate of lime is used in:
 a) Cement industry b) Glass industry c) Agriculture d) metallurgy
490. Noble gases are:
 a) Colourless
 b) Odourless
 c) Tasteless and non-inflammable
 d) All of the above
491. Nitric acid is used in the manufacture of :
 a) TNT b) Picric acid c) NH_4NO_3 d) All of these
492. The symbol Rn represent:
 a) Radium b) Radon c) Rhenium d) Rhodium
493. The gas which is absorbed by ferrous sulphate solution giving blackish brown colour is:
 a) NH_3 b) N_2 c) CO d) NO
494. Conc. HNO_3 is heated with P_2O_5 to form:
 a) N_2O b) NO c) NO_2 d) N_2O_5
495. Cold fire is related to
 a) White P b) Red P c) PH_3 d) P_2O_5
496. The non-existent species is:
 a) XeF_5 b) BrF_5 c) SbF_5 d) PF_5
497. In Kroll and ICl process of the production of titanium, the inert gas used is:
 a) Ne b) Ar c) Kr d) Xe
498. A 500 g toothpaste sample has 0.2 g fluoride concentration. What is the concentration of F^- in ppm?
 a) 250 b) 200 c) 400 d) 1000
499. PCl_3 on hydrolysis gives
 a) HPO_3 b) H_3PO_2 c) H_3PO_4 d) H_3PO_3
500. Which halogen does not show bleaching property?
 a) F_2 b) Cl_2 c) Br_2 d) I_2
501. Which of the following is called stranger gas?
 a) N_2O b) Xe c) Cl_2 d) N_2
502. Noble gases possess:
 a) High ionization potential
 b) Zero electron affinity
 c) High electrical conductance
 d) All of the above
503. What would happen when a solution of potassium chromate is treated with an excess of dilute nitric acid?
 a) CrO_4^{2-} is reduced to +3 state of Cr b) CrO_4^{2-} is oxidized to + 7 state of Cr
 c) $\text{Cr}_2\text{O}_7^{2-}$ and H_2O are formed d) Cr^{3+} and $\text{Cr}_2\text{O}_7^{2-}$ are formed
504. A green yellow gas reacts with an alkali metal hydroxide to form a halate which can used in fireworks and safety matches. The gas and halate respectively are
 a) Br_2 , KBrO_3 b) Cl_2 , KClO_3 c) I_2 , NaIO_3 d) Cl_2 , NaClO_3
505. When plants and animals decay, the organic nitrogen is converted into inorganic nitrogen
 a) Nitrates b) Nitrides c) Ammonia d) Elements of nitrogen
506. Which of the following species is not a pseudohalide?

- a) CNO^- b) RCOO^- c) OCN^- d) NNN^-
507. Dilute HNO_3 reacts with limestone to yield:
a) $\text{Ca(OH)}_2 \cdot \text{Ca(NO}_3)_2$ b) $\text{CaO} \cdot \text{Ca(NO}_3)_2$ c) $2\text{CaO} \cdot \text{Ca(NO}_3)_2$ d) None of the above
508. Sulphur is soluble in:
a) Water b) Dilute HCl c) Ether d) CS_2
509. Which of the following is formed by xenon?
a) XeF_7 b) XeF_4 c) XeF_5 d) XeF_3
510. The oxide which is solid at room temperature is:
a) N_2O b) NO c) N_2O_4 d) N_2O_5
511. Which hydride possesses the maximum complex forming nature?
a) NH_3 b) PH_3 c) BiH_3 d) SbH_3
512. Bad conductor of electricity is:
a) H_2F_2 b) HCl c) HBr d) HI
513. The van der Waals' forces in halogens decrease in the order:
a) $\text{F}_2 > \text{Cl}_2 > \text{Br}_2 > \text{I}_2$ b) $\text{I}_2 > \text{Br}_2 > \text{Cl}_2 > \text{F}_2$ c) $\text{Br}_2 > \text{Cl}_2 > \text{F}_2 > \text{I}_2$ d) $\text{Cl}_2 > \text{Br}_2 > \text{I}_2 > \text{F}_2$
514. The word argon means:
a) Noble b) Now c) Strange d) Lazy
515. SO_2 reacts with chlorine to form:
a) Sulphur monochloride
b) Sulphur dichloride
c) Sulphuryl chloride
d) Sulphur trichloride
516. Which hydride does not exist?
a) SbH_3 b) AsH_3 c) PH_5 d) N_2H_4
517. Ozone is formed by the interaction of water with:
a) Chloride b) Chlorine c) Fluorine d) Fluoride
518. PCl_5 exists but NCl_5 does not because:
a) Nitrogen has no vacant 'd' orbitals
b) Lower tendency of H-bond formation in P than N
c) Lower electronegativity of P than N
d) Occurrence of P in solid state while N_2 in gaseous state at room temperature
519. Which reaction is not valid?
a) $\text{HCl} + \text{F}_2 \rightarrow \text{HF} + \text{Cl}_2$ b) $\text{HF} + \text{Cl}_2 \rightarrow \text{F}_2 + \text{HCl}$
c) $\text{Zn} + \text{HCl} \rightarrow \text{ZnCl}_2 + \text{H}_2$ d) $\text{Al} + \text{HCl} \rightarrow \text{AlCl}_3 + \text{H}_2$
520. Arrange the acids (I) H_2SO_3 , (II) H_3PO_3 , and (III) HClO_3 in the decreasing order of acidic nature.
a) I > III > II b) I > II > III c) III > I > II d) II > III > I
521. With excess of chlorine, ammonia forms:
a) NCl_3 b) NOCl_2 c) N_2 d) NH_4Cl
522. Oxalic acid when heated with conc H_2SO_4 , gives out
a) CO and CO_2 b) CO_2 and H_2S c) H_2O and CO_2 d) Oxalic sulphate
523. The anhydride of hypochlorous acid is:
a) ClO_3 b) ClO_2 c) Cl_2O_5 d) Cl_2O
524. On bubbling F_2 in 2% solution of NaOH , the product formed are:
a) OF_2 b) NaF c) H_2O d) All of these
525. I_2 dissolves in KI solution due to the formation of
a) KI_2 and I^- b) K^+ , I^- and I_2 c) I_3^- d) None of these
526. The correct order of boiling points of the hydrides of nitrogen family is
a) $\text{NH}_3 > \text{PH}_3 > \text{AsH}_3 > \text{SbH}_3$ b) $\text{PH}_3 < \text{AsH}_3 < \text{NH}_3 < \text{SbH}_3$
c) $\text{NH}_3 < \text{PH}_3 < \text{SbH}_3 < \text{AsH}_3$ d) $\text{NH}_3 < \text{PH}_3 < \text{AsH}_3 < \text{SbH}_3$
527. In which process sulphur is not used?
a) Protection of grape wines

- b) Manufacture of H_2SO_4
 c) Manufacture of black shoe polish
 d) Vulcanization of rubber
528. When the mineral clevite is heated, it give off the inert gas
 a) Helium b) Xenon c) Radon d) Argon
529. In NH_3 and PH_3 , the common is
 a) Basic nature b) Odour c) Combustibility d) None of these
530. Oxygen is not readily reacted with
 a) P b) Cl c) Na d) S
531. Most acidic oxide among the following is
 a) Cl_2O_5 b) Cl_2O c) Cl_2O_3 d) Cl_2O_7
532. Which one has the highest bond energy?
 a) $\text{O}-\text{O}$ b) $\text{S}-\text{S}$ c) $\text{Se}-\text{Se}$ d) $\text{Te}-\text{Te}$
533. KMnO_4 is prepared by:
 a) Passing Cl_2 through K_2MnO_4 solution
 b) Passing O_2 through K_2MnO_4 solution
 c) Reaction of KOH with KMnO_4
 d) Fusing KON with MnO_2
534. Bromine is prepared in the laboratory by heating a mixture of:
 a) $\text{MgBr} + \text{H}_2\text{SO}_4$ b) $\text{MgBr}_2 + \text{Cl}_2$ c) $\text{KBr} + \text{MnO}_2 + \text{H}_2\text{SO}_4$ d) $\text{KBr} + \text{HCl}$
535. I_2 on rubbing with liquor NH_3 forms with explosion:
 a) NH_4I b) N_2 c) $\text{NH}_4\text{I} + \text{N}_2 + \text{I}_2$ d) NI_3NH_2
536. When KBr is treated with concentrated H_2SO_4 reddish brown gas evolved, gas is
 a) Mixture of bromine and HBr b) HBr
 c) Bromine d) None of the above
537. Which of the following noble gases is most reactive?
 a) He b) Ne c) Ar d) Xe
538. First stable compound of inert gas was prepared by:
 a) Rayleigh and Ramsay
 b) Bartlett
 c) Frankland and Lockyer
 d) Cavendish
539. The function of $\text{Fe}(\text{OH})_3$ in the contact process is
 a) To remove arsenic impurity b) To detect colloidal impurity
 c) To remove moisture d) To remove dust particles
540. Which is incorrect for bleaching powder?
 a) Highly soluble in water
 b) Light yellow coloured powder
 c) Oxidizing agent
 d) Reacts with dilute acid to release chlorine
541. Molecule with a three electron bond is:
 a) Cl_2 b) NO c) H_2O d) Cl_2O
542. Phosphorus pentoxide cannot be used to dry:
 a) Nitrogen b) Ammonia c) Hydrogen sulphide d) Sulphur dioxide
543. Calcium cyanamide on treatment with steam produces
 a) $\text{NH}_3 + \text{CaO}$ b) $\text{NH}_3 + \text{CaHCO}_3$ c) $\text{NH}_3 + \text{CaCO}_3$ d) $\text{NH}_3 + \text{Ca}(\text{OH})_2$
544. Which one of the following statements regarding helium is incorrect?
 a) It is used to produce and sustain powerful super conducting magnets
 b) It is used in gas-cooled nuclear reactors
 c) It is used to fill gas balloons instead of hydrogen because it is lighter and non-inflammable
 d) It is used as a cryogenic agent for carrying out experiments at low temperature

545. Hydrogen bromide is dried by passing the gas through:
 a) Quick lime b) Anhydrous CaCl_2 c) KOH pellets d) Conc. H_2SO_4
546. The ion that cannot undergo disproportionation is:
 a) ClO_4^- b) ClO_3^- c) ClO_2^- d) ClO^-
547. Which of the following is the most basic oxide?
 a) Bi_2O_3 b) SeO_2 c) Al_2O_3 d) Sb_2O_3
548. Which one is the anhydride of HClO_4 ?
 a) ClO_2 b) Cl_2O_7 c) Cl_2O d) Cl_2O_6
549. Phosphine is generally prepared in the laboratory?
 a) By heating phosphorus in a current of hydrogen
 b) By heating white phosphorus with aqueous solution of caustic potash
 c) By decomposition of P_2H_4 at 110°C
 d) By heating red phosphorus with an aqueous solution of caustic soda
550. In P_4O_6 the number of oxygen atoms bonded to each P atom is:
 a) 1.5 b) 2 c) 3 d) 4
551. The most abundant inert gas in air is:
 a) He b) Ne c) Ar d) Kr
552. When concentrated H_2SO_4 is added to dry KNO_3 , brown fumes evolve. These fumes are of:
 a) SO_2 b) SO_3 c) NO_2 d) NO
553. White phosphorus reacts with caustic soda to give PH_3 and NaH_2PO_2 . This reaction is an example of:
 a) Oxidation
 b) Reduction
 c) Neutralisation
 d) Oxidation and reduction
554. The molecular formula of dithionic acid is
 a) $\text{H}_2\text{S}_2\text{O}_4$ b) $\text{H}_2\text{S}_2\text{O}_6$ c) $\text{H}_2\text{S}_2\text{O}_5$ d) $\text{H}_2\text{S}_2\text{O}_7$
555. The correct order of pseudohalide, polyhalide and interhalogen are
 a) BrI_2^- , OCN^- , IF_5 b) IF_5 , BrI_2^- , OCN^- c) OCN^- , IF_5 , BrI_2^- d) OCN^- , BrI_2^- , IF_5
556. The substance which is solid at room temperature forms ionic compounds and reacts with hydrogen forming a hydride, the aqueous solution of which is acidic, could be
 a) Al b) Na c) Br_2 d) I_2
557. When I_2 is passed through KCl, KF and KBr solutions
 a) Cl_2 and Br_2 are evolved b) Cl_2 is evolved
 c) Cl_2 , Br_2 and F_2 are evolved d) None of the above
558. When I_2 is dissolved in CCl_4 , the colour that results is
 a) Colourless b) Brown c) Bluish green d) Violet
559. Oxide of nitrogen which is soluble in alcohol is:
 a) NO_2 b) N_2O c) N_2O_3 d) NO
560. The correct order of reducing abilities of hydrides of V group elements is
 a) $\text{NH}_3 < \text{PH}_3 < \text{AsH}_3 < \text{SbH}_3 < \text{BiH}_3$ b) $\text{NH}_3 > \text{PH}_3 > \text{AsH}_3 > \text{SbH}_3 > \text{BiH}_3$
 c) $\text{NH}_3 < \text{PH}_3 < \text{AsH}_3 < \text{SbH}_3 < \text{BiH}_3$ d) $\text{SbH}_3 > \text{BiH}_3 > \text{AsH}_3 > \text{NH}_3 > \text{PH}_3$
561. Available chlorine is liberated from bleaching powder when it:
 a) Is heated b) Reacts with water c) Reacts with acid d) Reacts with alkali
562. A salt of sulphurous acid is called:
 a) Sulphate b) Sulphurate c) Sulphite d) Sulphide
563. The sides of safety matches contains
 a) Red phosphorus + sand powder b) P_4S_3
 c) $\text{Ca}_3(\text{PO})_4$ + glass pieces d) KClO_3 , KNO_3 , sulphur + antimony
564. Which compound is prepared by the following reaction?



- a) XeF_4 b) XeF_2 c) XeF_6 d) None of these
565. The most stable hydride is
a) NH_3 b) PH_3 c) AsH_3 d) SbH_3
566. Thomas slag is:
a) $\text{Ca}_3(\text{PO}_4)_2$ b) CaCHNH_2 c) CaSiO_3 d) FeSiO_3
567. The second most electronegative element in periodic table is:
a) F b) O c) Cl d) N
568. Among the C—X bond (where X = Cl, Br, I) the correct bond energy order is:
a) C—Cl > C—Br > C—I
b) C—I > C—Cl > C—Br
c) C—Br > C—Cl > C—I
d) C—I > C—Br > C—Cl
569. When heated to 800°C , N_2O gives:
a) $\text{NO} + \text{O}_2$ b) $\text{NO}_2 + \text{O}_2$ c) $\text{N}_2 + \text{O}_2$ d) None of these
570. The oxidation number of S in S_8 , S_2F_2 and H_2S are respectively:
a) 0, +1, and -2 b) -2, +1, and -2 c) 0, +1 and +2 d) -2, +1, and +2
571. H_2SO_4 has very corrosive action on skin because:
a) It reacts with proteins
b) It acts as an oxidizing agent
c) It acts as dehydrating agent
d) It acts as dehydrating agent and absorption of water is highly exothermic
572. Which oxide do not act as a reducing agent?
a) N_2O_5 b) N_2O c) NO d) NO_2
573. Fuming sulphuric acid is
a) $\text{H}_2\text{SO}_4 + \text{SO}_3$ b) $\text{H}_2\text{SO}_4 + \text{SO}_2$ c) H_2SO_4 d) $\text{H}_2\text{SO}_4 + \text{SO}_4$
574. The weakest acid is:
a) H_2Se b) H_2Te c) H_2O d) H_2S
575. HIO_3 on heating gives:
a) I_2 b) O_2 c) I_2O_5 d) HI
576. Halogen used as an antiseptic is:
a) Fluorine b) Chlorine c) Bromine d) Iodine
577. HF is a weak acid but HCl is a strong acid because:
a) HF is less ionic than HCl
b) HF attacks glass but HCl does not
c) Bond energy of HF is higher than HCl
d) Electron affinity of fluorine is lower than chlorine
578. The product A in the following equation,
 $2\text{KMnO}_4 \rightarrow A + \text{MnO}_2 + \text{O}_2$, is:
a) $\text{K}_2\text{Mn}_2\text{O}_7$ b) K_2MnO_4 c) K_2O d) K_2O_2
579. The element present in combined state in *Laminaria stenophylla* is:
a) Bromine b) Iodine c) Fluorine d) Chlorine
580. In the manufacture of bromine from sea water, the mother liquor containing bromide is treated with
a) Carbon dioxide b) Chlorine c) Iodine d) Sulphur dioxide
581. Which of the following equations is not correctly formulated?
a) $3\text{Cu} + 8\text{HNO}_3(\text{dil.}) \rightarrow 3\text{Cu}(\text{NO}_3)_2 + 2\text{NO} + 4\text{H}_2\text{O}$
b) $3\text{Zn} + 8\text{HNO}_3(\text{very dil.}) \rightarrow 3\text{Zn}(\text{NO}_3)_2 + 2\text{NO} + 4\text{H}_2\text{O}$
c) $4\text{Sn} + 10\text{HNO}_3(\text{dil.}) \rightarrow 4\text{Sn}(\text{NO}_3)_2 + \text{NH}_4\text{NO}_3 + 3\text{H}_2\text{O}$
d) $\text{As} + 3\text{HNO}_3(\text{dil.}) \rightarrow \text{H}_3\text{AsO}_3 + 3\text{NO}_2$

582. P_4O_{10} has short and long P—O bonds. The number of short P—O bonds in this compound is:
 a) 1 b) 2 c) 3 d) 4
583. Which of the following acts as fluoro Lewis acids?
 a) RuF_5 b) SbF_5 c) AsF_5 d) All of these
584. A radioactive element X decays to give two inert gases. X is:
 a) ${}^{238}_{92}U$ b) ${}^{226}_{88}Ra$ c) ${}_{90}Th$ d) ${}_{89}Ac$
585. Which one of the following can be purified by sublimation?
 a) F_2 b) Cl_2 c) Br_2 d) I_2
586. Noble gases do not occur in:
 a) Nature b) Ores c) Atmosphere d) Sea water
587. Ammonia is:
 a) Polar solvent b) Non-polar c) Paramagnetic d) None of these
588. The treatment of Cu with dilute HNO_3 gives
 a) N_2O b) NO c) NH_4^+ d) NO_2
589. Wrong statement about HNO_3 is:
 a) The proteins are converted into xanthoproteins
 b) HNO_3 acts as a dehydrating agent
 c) It exists in two canonical forms
 d) HNO_3 acts as an oxidizing agent
590. Sulphur on boiling with NaOH solution gives
 a) $Na_2SO_3 + H_2S$ b) $Na_2S_2O_3 + Na_2S$ c) $Na_2S_2O_3 + NaHSO_3$ d) $Na_2SO_3 + SO_2$
591. Electronegativity of an inert gas is:
 a) High b) Low c) Negative d) Zero
592. Good conductor of electricity is:
 a) Yellow P b) Red p c) Violet P d) Black P
593. Which burns to form an oxide which is gas at room temperature?
 a) Hydrogen b) Phosphorus c) Sodium d) Sulphur
594. Helium was discovered by:
 a) Frankland and Lockyer
 b) Rayleigh
 c) Ramsay
 d) None of these
595. SO_2 does not act as
 a) Bleaching agent b) Oxidising agent c) Reducing agent d) Dehydrating agent
596. $NaOH + P_4 + H_2O \rightarrow ?$
 a) $PH_3 + NaH_2PO_2$ b) $PH_3 + Na_2PO_4$ c) $PH_3 + Na_2HPO_2$ d) $H_3PO_4 + NaO$
597. Peroxy linkage is present in:
 a) Caro's acid b) Pyrosulphuric acid c) Sulphurous acid d) Dithionic acid
598. Which requires catalyst?
 a) $S + O_2 \rightarrow SO_2$ b) $2S O_2 + O_2 \rightarrow 2SO_3$ c) $C + O_2 \rightarrow CO_2$ d) All of the above
599. Which of the following is used in very low temperature thermometers?
 a) He b) Ne c) H_2 d) N_2
600. The noble gas forming maximum number of compound is
 a) Xe b) Ne c) Ar d) He
601. Dinitrogen tetroxide, N_2O_4 , is a mixed anhydride because it:
 a) Is a mixture of N_2O_3 and N_2O_5
 b) Decomposes into two oxides of nitrogen
 c) Reacts with water to form nitric acid
 d) Reacts with water to form two acids
602. A depolarizer used in dry batteries is:

- a) KOH b) NH_2OH c) MnO_2 d) Na_3PO_4
603. Which one of the following statements regarding helium is incorrect?
 a) It is used to fill gas balloons instead of hydrogen because it is lighter and non- inflammable
 b) It is used as a cryogenic agent for carrying out experiments at low temperatures.
 c) It is used to produce and sustain powerful superconducting magnets
 d) It is used in gas cooled nuclear reactors.
604. Which of the following is not obtained by direct reaction of constituent elements?
 a) XeO_3 b) XeF_2 c) XeF_6 d) XeF_4
605. White phosphorus is
 a) A monoatomic gas b) P_4 a tetrahedral solid
 c) P_8 , a crown d) A linear diatomic molecule
606. Sides of match box have coating of
 a) Potassium chlorate, red lead b) Antimony sulphide, red phosphorus
 c) Potassium chlorate, antimony sulphide d) Antimony sulphide, red lead
607. A positive chromyl chloride test is given by a salt containing:
 a) Br^- b) Cl^- c) SO_3^{2-} d) I^-
608. Zinc and cold dil. HNO_3 reacts to produce?
 a) NO b) NO_2 c) NH_4NO_3 d) ZnNO_3
609. In presence of moisture, SO_2 can
 a) Act as oxidant b) Act as reductant c) Gain electron d) Not act as reductant
610. Which has the highest molar heat of vaporization?
 a) HBr b) HCl c) HF d) HI
611. SO_2 can be used as:
 a) Bleaching agent b) Disinfectant c) Antichlor d) All of these
612. When sugar is treated with concentrated sulphuric acid, the sugar is charred. In this process, sugar is:
 a) Oxidized b) Dehydrated c) Reduced d) sulphonated
613. Liquid ammonia is used for refrigeration because
 a) It is basic b) It is a stable compound
 c) It has a high dipole moment d) It has a high heat of vaporisation
614. The smog is essentially caused by the presence of
 a) O_2 and N_2 b) O_2 and O_3
 c) O_3 and N_2 d) Oxides of sulphur and nitrogen
615. Boiling of dil. HCl acid does not increase its concentration beyond 20.24 per cent because hydrochloric acid:
 a) Is very volatile
 b) Is extremely soluble in water
 c) Forms a constant boiling mixture
 d) Forms a saturated solution at this concentration
616. Concentrated hydrochloric acid when kept in open air sometimes produces a cloud of white fumes. The explanation for it is that:
 a) Strong affinity of HCl gas for moisture in air results in forming of droplets of liquid solution which appears like a cloudy smoke
 b) Due to strong affinity for water conc. HCl pulls moisture of air towards itself. The moisture forms droplets of water and hence the cloud
 c) conc. HCl emits strongly smelling gas all the time
 d) Oxygen in air reacts with the emitted HCl gas to form a cloud of chlorine gas
617. Atomicity of phosphorus is:
 a) 1 b) 2 c) 3 d) 4
618. Each of the following is true for white and red phosphorus except that they
 a) Can be oxidised by heating in air b) Are both soluble in CS_2

- c) Consists of same kind of atoms
 619. The $M-Cl$ bond energies are different in:
 a) PCl_5 b) PCl_3 c) CCl_4 d) NCl_3
620. Most acidic oxide is:
 a) As_2O_3 b) P_2O_3 c) Sb_2O_3 d) Bi_2O_3
621. King of chemicals is:
 a) HNO_3 b) H_2SO_4 c) HCl d) None of these
622. Fluorine is the best oxidising agent because it has
 a) Highest electron affinity b) Highest E_{red}°
 c) Highest E_{oxid}° d) Lowest electron affinity
623. Which bond has the greatest polarity?
 a) $H-Cl$ b) $H-Br$ c) $H-I$ d) $H-F$
624. Berthelot's salt is:
 a) $KClO_3$ b) KIO_3 c) $KBrO_3$ d) None of these
625. The strongest oxidizing agent among the following is:
 a) Ozone b) Oxygen c) Fluorine d) Chlorine
626. All the elements of the oxygen family are:
 a) Non-metals b) Metalloids c) Radioactive d) Polymorphic
627. As the number of $-OH$ groups increases in hypophosphorus acid phosphorus acid and phosphoric acid the acidic strength
 a) Increases b) Decreases
 c) Remains nearly same d) Remains appropriately same
628. Nitric acid oxidizes sulphur to:
 a) SO_2 b) SO_3 c) H_2SO_3 d) H_2SO_4
629. Which one is correct if HCl and HF are present together in liquid state?
 a) $HCl + HF \rightarrow H_2Cl^+ + F^-$
 b) $HCl + HF \rightarrow$ No reaction
 c) $HCl + HF \rightarrow H_2F^+ + Cl^-$
 d) None of the above
630. Red phosphorus is chemically unreactive because:
 a) It does not contain $P-P$ bonds
 b) It does not contain tetrahedral P_4 molecules
 c) It does not catch fire in air even upto $400^\circ C$
 d) It has a polymeric structure
631. Which acid is not formed by the action of water on phosphorus pentoxide?
 a) HPO_3 b) $H_4P_2O_7$ c) H_3PO_4 d) H_3PO_3
632. To make nitrogen dioxide free from oxygen it is passed through U-tube:
 a) Containing $FeSO_4$ solution
 b) Containing $NaOH$ solution
 c) Kept in freezing mixture
 d) Kept in boiling water
633. Sulphur does not combine with which of the following halogens to form a compound?
 a) Cl_2 b) Br_2 c) I_2 d) F_2
634. If Na_2SO_3 is left open in air, we get:
 a) Na_2S b) Na_2SO_4 c) $NaHSO_4$ d) $NaHSO_3$
635. Which is planar molecule?
 a) XeO_4 b) XeF_4 c) $XeOF_4$ d) XeO_2F_2
636. Bacteria convert molecular nitrogen into:
 a) NO_3 b) Amino acids c) NO_2 d) NH_3
637. Nitric acid (conc.) oxidizes phosphorus to:

- a) H_3PO_4 b) P_2O_3 c) H_3PO_3 d) $\text{H}_4\text{P}_2\text{O}_7$
638. The acidity of hydrides of O, S, Se, Te varies in the order
 a) $\text{H}_2\text{O} > \text{H}_2\text{S} > \text{H}_2\text{Se} > \text{H}_2\text{Te}$ b) $\text{H}_2\text{O} < \text{H}_2\text{S} < \text{H}_2\text{Se} < \text{H}_2\text{Te}$
 c) $\text{H}_2\text{S} > \text{H}_2\text{O} > \text{H}_2\text{Se} > \text{H}_2\text{Te}$ d) $\text{H}_2\text{Se} > \text{H}_2\text{S} > \text{H}_2\text{O} > \text{H}_2\text{Te}$
639. Which of the following is anhydride of perchloric acid?
 a) Cl_2O_7 b) Cl_2O_5 c) Cl_2O_3 d) HClO
640. When plants and animals decay the organic nitrogen is converted into inorganic nitrogen. The inorganic nitrogen in the form of
 a) Ammonia b) Elements of nitrogen c) Nitrates d) Nitrides
641. Minimum bond length will be in:
 a) H_2S b) HF c) H_2O d) ICI
642. Which of the following has no action with starch solution?
 a) F_2 and Cl_2 b) Br_2 c) I_2 d) None of these
643. H_2S on passing through KMnO_4 solution gives:
 a) K_2SO_3 b) S c) K_2MnO_4 d) MnO_2
644. What may be expected to happen when phosphine gas is mixed with chlorine gas?
 a) PCl_5 and HCl are formed and the mixture cools down
 b) $\text{PH}_3 \cdot \text{Cl}_2$ is formed with warming up
 c) PCl_3 and HCl are formed and the mixture warms up
 d) The mixture only cools down
645. The compound that gives chlorine like smell is:
 a) CHCl_3 b) CaOCl_2 c) Chloroform d) None of these
646. Hyponitrous acid is:
 a) HNO_2 b) HNO_4 c) $\text{H}_2\text{N}_2\text{O}_2$ d) CaN_2
647. $\text{P}_4 + 3\text{NaOH} + 3\text{H}_2\text{O} \rightarrow \text{A} + 3\text{NaH}_2\text{PO}_2$ here A is
 a) NH_3 b) PH_3 c) H_3PO_4 d) H_3PO_3
648. A gas X is passed through water to form a saturated solution. The aqueous solution on treatment with AgNO_3 gives a white precipitate. The saturated aqueous solution also dissolves Mg ribbon with evolution of colourless gas Y. X and Y are respectively:
 a) CO_2, Cl_2 b) Cl_2, CO_2 c) Cl_2, H_2 d) H_2, Cl_2
649. In which reaction there is no change in valency and the oxidation state?
 a) $\text{SO}_2 + \text{H}_2\text{S} \rightarrow 2\text{H}_2\text{O} + 3\text{S}$
 b) $2\text{Na} + \text{O} \rightarrow \text{Na}_2\text{O}$
 c) $\text{Na}_2\text{O}_2 + \text{H}_2\text{SO}_4 \rightarrow \text{Na}_2\text{SO}_4 + \text{H}_2\text{O}_2$
 d) $4\text{KClO}_3 \rightarrow 3\text{KClO}_4 + \text{KCl}$
650. Oxygen gas can be prepared from solid KMnO_4 by:
 a) Dissolving the solid in dil. HCl
 b) Dissolving the solid in dil. H_2SO_4
 c) Treating the solid with H_2 gas
 d) Strongly heating the solid
651. In solid state of noble gases, the atoms are held together by:
 a) Ionic bonds b) Hydrogen bonds c) Van der Waals' forces d) Hydrophobic forces
652. Potassium manganate (K_2MnO_4) is formed when:
 a) Chlorine is passed into aqueous K_2MnO_4 solution
 b) Manganese dioxide is fused with potassium hydroxide in air
 c) Potassium permanganate reacts with conc. Sulphuric acid
 d) None of the above
653. Phosphorus pentoxide is widely used as
 a) Bleaching agent b) Dehydrating agent c) Oxidising agent d) Reducing agent
654. In the reaction, $\text{HCOOH} \xrightarrow{\text{H}_2\text{SO}_4} \text{CO} + \text{H}_2\text{O}$; H_2SO_4 acts as

- a) Reducing agent b) Oxidising agent c) Dehydrating agent d) All of these
655. Which are hydrolysed by water?
a) XeF_2 b) XeF_4 c) XeF_6 d) All of these
656. Weldon mud is:
a) MnO_2 b) Mn(OH)_2 c) $2\text{CaO} \cdot \text{MnO}_2$ d) Mn_2O_3
657. In the manufacture of H_2SO_4 the nitrated acid from the Gay-Lussac's tower is chemically:
a) $\text{H}_2\text{SO}_4 \cdot \text{NO}_2$ b) $\text{H}_2\text{SO}_4 \cdot \text{NO}$ c) $\text{H}_2\text{SO}_4 \cdot 2\text{NO}$ d) $\text{HSO}_4 \cdot \text{NO}$
658. In PCl_5 , phosphorus undergoes:
a) sp^2 -hybridisation b) sp^3 -hybridisation c) sp^3d -hybridisation d) sp^3d^2 -hybridisation
659. The perchlorate ion with maximum oxidizing power is:
a) ClO_4^- b) BrO_4^- c) IO_4^- d) ClO^-
660. If two litre of air is passed repeatedly over heated copper and heated Mg till no further reduction in volume takes place, the volume finally obtained will be approximately:
a) 200 mL b) 20 mL c) Zero d) 10 mL
661. What products are expected from the disproportionation reaction of hypochlorous acid?
a) HClO_3 and Cl_2O b) HClO_2 and HClO_4 c) HCl and Cl_2O d) HCl and HClO_3
662. On exciting Cl_2 molecule by UV light, we get
a) Cl^\cdot b) Cl^- c) Cl^+ d) All of these
663. Smelling salt is:
a) $(\text{NH}_4)_2\text{SO}_4$ b) $(\text{NH}_4)_3\text{PO}_4$ c) NH_4Cl d) $(\text{NH}_4)_2\text{CO}_3$
664. Sulphate ion has geometry.
a) Trigonal b) Square planar c) Tetrahedral d) None of these
665. Sulphur in + 3 oxidation state is present in
a) Dithionous acid b) Sulphurous acid c) Thiosulphuric acid d) Pyrosulphuric acid
666. Oleum is
a) Fuming H_2SO_4 b) Oil of vitriol c) Castor oil d) Caro's acid
667. A helium atom on losing an electron becomes:
a) α -particle
b) Hydrogen atom
c) Positively charged helium ion
d) Negatively charged helium ion
668. Concentrated nitric acid on heating decomposes to give:
a) O_2 and N_2 b) NO c) O_2 d) NO_2 and O_2
669. Bromine is obtained on a commercial scale from:
a) Caliche b) Carnallite c) Common salt d) Cryolite
670. The blue coloured gas is:
a) F_2 b) O_3 c) NO d) Cl_2
671. The catalyst used in Haber's process for synthesis of NH_3 is:
a) Pt b) V_2O_5 c) Fe d) Mo
672. The mixture of conc. HCl and HNO_3 made in 3:1 ratio contains
a) ClO_2 b) NOCl c) NCl_3 d) N_2O_4
673. H_2S does not produce metallic sulphide with
a) ZnCl_2 b) COCl_2 c) CuCl_2 d) CdCl_2
674. Large deposits of sulphur in nature are found in the form of:
a) Flowers of sulphur b) H_2SO_4 c) H_2SO_3 d) Free sulphur
675. Which of the following does not exist?
a) $\text{KrF}^-[\text{SbF}_6]^-$ b) $[\text{KrF}_3]^-[\text{SbF}_4]^+$ c) $\text{KrF}^+[\text{MoOF}_5]$ d) $\text{KrF}^+[\text{WOF}_5]^-$
676. In XeO_3 , Xe is:
a) sp^3 -hybridized b) sp^2 -hybridized c) sp -hybridized d) sp^3d -hybridized
677. When H_2S reacts with halogens, halogens:

- a) Are oxidized b) Are reduced c) Form Sulphur halides d) None of these
678. Gaseous HCl is a poor conductor of electricity, while its aqueous solution is a good conductor. This is because:
 a) H₂O is a good conductor of electricity
 b) A gas cannot conduct electricity, but a liquid can
 c) HCl gas does not obey Ohm's law, whereas the solution does
 d) HCl ionizes in aqueous solution
679. Oxygen exhibits positive oxidation state in
 a) CO b) F₂O c) NO d) N₂O
680. The poisson's ratio for inert gases is:
 a) 1.40 b) 1.66 c) 1.34 d) None of these
681. The noble gas which is not found in atmosphere?
 a) Ne b) Ar c) Rn d) Kr
682. Which is not correct for white phosphorus (P₄)?
 a) Six P—P sigma bonds
 b) Four P—P single bonds
 c) Four lone pair of electrons
 d) P—P—P angle of 60°
683. Reaction of HNO₃ with I, S, P and C gives respectively
 a) HIO₃, H₂SO₄, H₃PO₄ and CO₂ b) HIO₃, H₂SO₄, H₃PO₃ and CO₂
 c) HIO₂, H₂SO₄, H₃PO₄ and CO d) I₂O₅, SO₂, P₂O and CO₂
684. Which of the following cannot be formed?
 a) He²⁺ b) He⁺ c) He d) He₂
685. Make the element which displaces three halogens from their compounds
 a) Br b) F c) Cl d) I
686. Which of the following phosphorus is most stable?
 a) White b) Red c) Black d) All stable
687. Ozone reacts with dry iodine to give:
 a) IO₂ b) I₂O₃ c) I₂O₄ d) I₄O₉
688. Fluorine absorbs portion of light and appears yellow.
 a) Yellow b) Green c) Violet d) Red
689. The hybridization and bond angle in SO₃ are:
 a) sp², 120° b) sp³, 109° 28' c) sp², 109° 28' d) None of these
690. The substance used in smoke screen is
 a) Sodium chloride b) Sodium phosphate c) Calcium fluoride d) Calcium phosphide
691. Which is cyclic phosphate?
 a) Na₅P₃O₁₀ b) Na₆P₄O₁₃ c) Na₄P₄O₁₂ d) Na₇P₅O₁₆
692. PCl₅ does not react with:
 a) CH₃COOH b) C₂H₅NH₂ c) C₆H₅OH d) H₂SO₄
693. Elements O, S, Se and Te are usually known as:
 a) Metals b) Rare earth metals c) Coinage metals d) Chalcogens
694. Phosphine is produced by adding water to
 a) CaC₂ b) HPO₃ c) Ca₃P₂ d) P₄O₁₀
695. Which of the following is more soluble in water?
 a) N₂ b) O₂ c) Ar d) He
696. Which of the following compound is tribasic acid?
 a) H₃PO₂ b) H₃PO₃ c) H₃PO₄ d) H₄P₂O₇
697. Which pair gives Cl₂ at room temperature?
 a) Conc. HCl + KMnO₄ b) NaCl + Conc. H₂SO₄ c) NaCl + MnO₂ d) NaCl + Conc. HNO₃
698. Which of the following oxide does not form acidic aqueous solution?

699. Which one below is a pseudohalide?
 a) N_2O_3 b) NO_2 c) N_2O_5 d) NO
700. The Nessler's reagent contains:
 a) Hg_2^{2+} b) Hg^{2+} c) Hg_2^- d) Hg_4^{2-}
701. Interhalogen compounds are:
 a) Ionic compounds
 b) Coordinate compounds
 c) Molecular compounds
 d) Covalent compounds
702. Fluorine does not show positive oxidation states because:
 a) It is a most electronegative element
 b) It forms only anions in ionic compounds
 c) It cannot form multiple bonds
 d) It shows non-bonded electron pair repulsion due to small size
703. Poison for platinum, a catalyst in contact process of H_2SO_4 is:
 a) S b) P c) As d) C
704. The solubility of iodine in water is greatly increased by:
 a) Adding an acid
 b) Boiling the solution
 c) Cooling the solution
 d) Adding potassium iodide
705. The catalyst used in the preparation of red P from yellow P is:
 a) I_2 b) Ni c) ZnO d) Fe
706. Which one of the following is present as an active ingredient in bleaching powder for bleaching action?
 a) CaCl_2 b) CaOCl_2 c) $\text{Ca}(\text{OCl})_2$ d) CaO_2Cl
707. Nitrogen dioxide
 a) Does not dissolve in water
 b) Dissolves in water forming nitric acid
 c) Dissolves in water to form a mixture of nitrous and nitric acid
 d) Dissolves in water to form nitrous acid and gives off oxygen
708. The gas used in gas thermometer is:
 a) He b) O_2 c) Xe d) Ne
709. Mixture of O_2 and N_2O is used as:
 a) Fuel b) Anaesthetic c) In welding d) Oxidizing agent
710. Which of the following acids does not attack Cu and Ag?
 a) Dilute HNO_3 b) Dilute HCl c) Conc. H_2SO_4 d) Aqua regia
711. Number of isotopes of oxygen is:
 a) 1 b) 3 c) 2 d) 0
712. The angular shape of ozone molecule (O_3) consists of:
 a) 2 sigma and 2 π -bonds
 b) 1 sigma and 1 π -bond
 c) 2 sigma and 1 π -bond
 d) 1 sigma and 2 π -bonds
713. Bromine vapour turns moist starch-iodide paper:
 a) Brown b) Red c) Blue d) Colourless
714. Nitric oxide is prepared by the action of HNO_3 on
 a) Cu b) Sn c) Zn d) Fe
715. The allotrope of Sulphur stable below 90°C is:
 a) Rhombic sulphur b) Monoclinic sulphur c) Plastic sulphur d) Flowers of sulphur

716. Concentrated H_2SO_4 is not used to prepare HBr from KBr because it:
- Oxidizes HBr
 - Reduces HBr
 - Causes disproportionation of HBr
 - Reacts too slowly with KBr
717. There is an ozone layer at a height of about 29 kilometres above the surface of the earth. Which of the following statements is true?
- It is harmful because ozone is dangerous to living organisms
 - It is beneficial because oxidation reactions can proceed faster in the presence of ozone
 - It is beneficial because ozone cuts out the ultraviolet radiation of the sun
 - It is harmful because ozone cuts out the important radiations of the sun which are vital for photosynthesis
718. Cl_2 on passing through Na_2SO_3 solution gives:
- Na_2S
 - Na_2SO_4
 - NaHSO_3
 - NaHS
719. SO_2 reduces:
- Mg
 - H_2S
 - KMnO_4
 - All of these
720. The brown yellow colour often shown by nitric acid can be removed by:
- Bubbling air through the warm acid
 - Boiling the acid
 - Passing ammonia through acid
 - Adding a little Mg powder
721. Which one will liberate Br_2 from KBr ?
- I_2
 - SO_2
 - HI
 - Cl_2
722. The halide which does not give a precipitate with AgNO_3 is:
- F^-
 - Cl^-
 - Br^-
 - I^-
723. HF present as impurity in gaseous F_2 , can be removed by passing over:
- P_2O_5
 - NaF
 - H_2SO_4
 - CaCl_2
724. In pyrophosphoric acid the number of hydroxy groups present are:
- 4
 - 3
 - 5
 - 7
725. Deep sea divers used to respire is a mixture of
- Oxygen and nitrogen
 - Oxygen and argon
 - Oxygen and hydrogen
 - Oxygen and helium
726. Which of the following gives M^{3+} ion most readily?
- P
 - N
 - Sn
 - Bi
727. Oxygen is more electronegative than sulphur, yet H_2S is acidic while H_2O is neutral. This is because:
- Water is a highly associated compound
 - $\text{H}-\text{S}$ bond is weaker than $\text{H}-\text{O}$ bond
 - H_2S is a gas while H_2O is a liquid
 - The molecular weight of H_2S is more than that of H_2O
728. HI reacts with HNO_3 to form:
- O_2
 - N_2O
 - HIO_3
 - $\text{NO}_2 + \text{I}_2$
729. Phosphate + conc. HNO_3 + $(\text{NH}_4)_2\text{MoO}_4$ solution \rightarrow Yellow precipitate.
The composition of yellow precipitate is:
- $(\text{NH}_4)_3\text{PO}_4 \cdot \text{MoO}_3$
 - $(\text{NH}_4)_3\text{PO}_4 \cdot 12\text{MoO}_3$
 - $(\text{NH}_4)_2\text{PO}_4 \cdot 12\text{MoO}_3$
 - $\text{NH}_4\text{PO}_4 \cdot \text{MoO}_3$
730. Density of nitrogen gas prepared from air is slightly greater than that of nitrogen prepared by chemical reaction from a compound of nitrogen because aerial nitrogen contains:
- CO_2
 - Argon
 - Some N_2 molecules analogous to O_2
 - Greater amount of N_2 molecules derived from N^{15} isotope
731. Antichlor is a compound:

- a) Which absorbs chlorine
 b) Which removes Cl_2 from a material
 c) Which liberates Cl_2 from bleaching powder
 d) Which acts as a catalyst in the manufacture of Cl_2
732. When F_2 reacts with hot and concentrated NaOH then following will be obtained
 a) O_2 b) H_2 c) Na_2O d) Na
733. The geometry of XeOF_4 molecule is
 a) Tetrahedral b) Square pyramidal c) Square planar d) Octahedral
734. Oleum is
 a) Castor oil b) Oil of vitriol c) Fuming H_2SO_4 d) None of these
735. Which reacts rapidly with oxygen in the air at ordinary temperature?
 a) White P b) Red P c) N_2 d) N_2O
736. The chief source of iodine in which it is present as sodium iodate is
 a) Carnallite b) Sea weeds
 c) Caliche d) Iodine never exists as sodium iodate
737. As the atomic number of the halogens increases, the halogens:
 a) Lose the outermost electrons less readily
 b) Become lighter in colour
 c) Become less dense
 d) Gain electrons less readily
738. An interhalogen compound is:
 a) IF_5 b) I_3^- c) CN^- d) $(\text{CN})_2$
739. Phosphine is not collected in air because:
 a) It is poisonous
 b) It absorbs moisture
 c) It catches fire spontaneously in air
 d) It is combustible
740. Bones glow in the dark, because:
 a) They contain a shining material
 b) They contain red phosphorus
 c) White phosphorus changes into red phosphorus
 d) White phosphorus undergoes slow combustion with air
741. Oxygen exhibits positive oxidation state with:
 a) F b) Br c) Cl d) I
742. Which gives carbon with conc. H_2SO_4 ?
 a) Formic acid b) Ethyl alcohol c) Oxalic acid d) Starch
743. The atom larger in size as compared to oxygen is:
 a) Ne b) F c) He d) All of these
744. In the reaction,

$$2\text{Ag} + 2\text{H}_2\text{SO}_4 \rightarrow \text{Ag}_2\text{SO}_4 + 2\text{H}_2\text{O} + \text{SO}_2, \text{H}_2\text{SO}_4 \text{ is:}$$
 a) Reducing agent b) Oxidant c) Catalyst d) Dehydrating agent
745. Among the phosphatic fertilizers, superphosphate of lime is a mixture of $\text{Ca}(\text{H}_2\text{PO}_4)_2$ and:
 a) $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$ b) $\text{CaSO}_4 \cdot \text{H}_2\text{O}$ c) $\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O}$ d) CaSO_4
746. What is the oxidising agent chlorine water?
 a) HCl b) HClO_2 c) HOCl d) None of these
747. Which of the following halogens is solid at room temperature?
 a) Iodine b) Fluorine c) Chlorine d) Bromine
748. Vegetable colouring matter in presence of moisture is bleached by SO_2 due to:
 a) Oxidation b) Reduction c) Sulphonation d) Unsaturation
749. White phosphorus (P_4) does not contain

- a) Six P – P single bond
c) Four lone pairs of electrons
- b) Four P – P single bond
d) P – P – P angle of 60°
750. The anhydride of nitrous acid is:
a) N_2O_3 b) NO c) N_2O d) N_2O_4
751. XeF_2 on hydrolysis gives
a) XeO_3 b) XeO c) Xe d) XeO_2
752. Coconut charcoal at $-180^\circ C$ is used to separate a mixture of:
a) Ar and Kr b) Ne and Ar c) He and Kr d) He and Ne
753. Paramagnetic oxide of chlorine is:
a) ClO_3 b) Cl_2O_6 c) Cl_2O d) None of these
754. Decreasing order of reducing power of hydrogen halides is:
a) $HI > HBr > HCl > HF$
b) $HF > HI > HBr > HCl$
c) $HI > HF > HBr > HCl$
d) None of these
755. Nitrogen does not combine directly with:
a) Ca b) Al c) Ag d) Mg
756. Which of the following is the strongest oxidising agent?
a) HOCl b) $HClO_2$ c) $HClO_3$ d) $HClO_4$
757. In case of halogen family, which trend occurs as the atomic number increases?
a) Ionic radius decreases
b) Ionization potential decreases
c) Covalent character in MX_2 decreases (where M =metal and X =halogen)
d) None of the above
758. What is the product formed when phosphorus trioxide is dissolved in water?
a) HPO_3 b) H_3PO_4 c) H_3PO_3 d) HPO_2
759. Approximately what percentage of air by volume gets used in a process of combustion?
a) 20% b) 10% c) 35% d) 55%
760. There is no S – S bond is
a) $S_2O_4^{2-}$ b) $S_2O_3^{2-}$ c) $S_2O_5^{2-}$ d) $S_2O_7^{2-}$
761. The acidic nature of HF can be increased in presence of:
a) SbF_5 b) H_2O c) $HClO_4$ d) None of these
762. Identify the incorrect statement among the following
a) Ozone reacts with SO_2 to give SO_3
b) Silicon reacts with $NaOH(aq)$ in the presence of air to give Na_2SiO_3 and H_2O
c) Cl_2 reacts with excess of NH_3 to give N_2 and HCl
d) Br_2 reacts with hot and strong $NaOH$ solution to give $NaBr$, $NaBrO_4$ and H_2O
763. S—S bond is not present in:
a) $S_2O_7^{2-}$ b) $S_4O_6^{2-}$ c) $S_2O_4^{2-}$ d) $S_2O_3^{2-}$
764. Which of the following oxides are acidic?
a) Mn_2O_7 b) CrO_3 c) Both (a) and (b) d) None of these
765. The pentavalence in phosphorus is more stable as compared to that of nitrogen even though they belong to the same group. It is due to
a) Inert nature of nitrogen b) Reactivity of phosphorus
c) Larger size of phosphorus atom d) Dissimilar electronic configuration
766. Which of the following is kept in water?
a) White phosphorus b) Sodium c) Potassium d) Calcium
767. The formula of iodine acetate is:
a) $I(CH_3COO)$ b) $I(CH_3COO)_3$ c) $I_2(CH_3COO)$ d) $(CH_3COO)_2I$
768. Phosphine is not evolved when:

- a) White phosphorus is boiled with a strong solution of $\text{Ba}(\text{OH})_2$
 b) Phosphorus acid is heated
 c) Calcium hypophosphite is heated
 d) Metaphosphoric acid is heated
769. The last orbit of argon would have electrons
 a) 2 b) 6 c) 8 d) 18
770. Xenon directly combines with:
 a) Oxygen b) Rubidium c) Fluorine d) Chlorine
771. Structure of XeF_5^+ ion is
 a) Trigonal bipyramidal b) Square pyramidal c) Octahedral d) Pentagonal
772. Thermal stability of hydrogen halide follows the order:
 a) $\text{HI} > \text{HBr} > \text{HCl} > \text{HF}$
 b) $\text{HI} > \text{HF} > \text{HBr} > \text{HCl}$
 c) $\text{HI} > \text{HBr} > \text{HF} > \text{HCl}$
 d) $\text{HF} > \text{HCl} > \text{HBr} > \text{HI}$
773. Iodine is formed when KI reacts with solution of
 a) CuSO_4 b) $(\text{NH}_4)_2 \text{SO}_4$ c) ZnSO_4 d) FeSO_4
774. The strongest reducing agent among the following is
 a) F^- b) Cl^- c) Br^- d) I^-
775. In Birkeland Eyde process, the raw material used is
 a) Air b) NO_2 c) HNO_3 d) NH_3
776. Liquid flow from a higher to a lower level. Which of the following liquids can climb up the wall of the glass vessel in which it is placed?
 a) Alcohol b) Liquid He c) Liquid N_2 d) water
777. Which is not correct for N_2O ?
 a) It is laughing gas and is used as anaesthetic agent
 b) It is nitrous oxide
 c) It is not a linear molecule
 d) It is least reactive of all the oxides of nitrogen
778. The strongest acidic oxide is:
 a) SO_2 b) SO_3 c) P_2O_5 d) Sb_2O_3
779. Apatite is an ore of
 a) Fluorine b) Chlorine c) Bromine d) Iodine
780. The sulphur molecule (S_8) possesses:
 a) Cubical structure
 b) Spherical structure
 c) Tetrahedral structure
 d) W-shaped ring structure
781. Copper turnings when heated with concentrated sulphuric acid will give
 a) H_2S b) SO_2 c) SO_3 d) O_2
782. PCl_5 is prepared by the action of Cl_2 on:
 a) P_2O_3 b) P_2O_5 c) H_3PO_3 d) PCl_3
783. Chlorine water on cooling deposits greenish-yellow crystals of:
 a) $\text{Cl}_2 \cdot 2\text{H}_2\text{O}$ b) $\text{Cl}_2 \cdot \text{H}_2\text{O}$ c) $\text{Cl}_2 \cdot 3\text{H}_2\text{O}$ d) $\text{Cl}_2 \cdot 8\text{H}_2\text{O}$
784. Which inert gas have highest boiling point?
 a) Xe b) Ar c) Kr d) He
785. Metaphosphoric acid is:
 a) H_3PO_2 b) HPO_3 c) H_3PO_3 d) H_3PO_4
786. H_3PO_3 has..... non ionisable P—H bonds
 a) 3 b) 1 c) 2 d) None of these

- a) PH_4I b) AsH_3 c) SbCl_2 d) As_2O_3
804. A colourless gas on passing through bromine water decolourises it. The gas is:
a) HCl b) HBr c) CO_2 d) SO_2
805. When silver chloride dissolves in ammonia, it forms?
a) $\text{Ag}(\text{NH}_3)\text{Cl}$ b) $\text{Ag}(\text{NH}_3)_2\text{Cl}$ c) $\text{Ag}(\text{NH}_3)_3\text{Cl}$ d) $\text{Ag}(\text{NH}_3)_4\text{Cl}$
806. Which of the following pairs has bleaching property?
a) O_3 and NO_2 b) O_3 and H_2S c) SO_2 and Cl_2 d) Cl_2 and NO_2
807. Which of the following is not a hydride?
a) HCl b) CaH_2 c) CsH d) LiH
808. Iron is dropped in dil HNO_3 it gives
a) Ferric nitrate b) Ferric nitrate and NO_2
c) Ferrous nitrate and ammonium nitrate d) Ferrous nitrate and nitric oxide
809. Pnicogens are the elements of group?
a) 15 b) 13 c) 8 d) Zero
810. The percentage of available chlorine in a commercial sample of bleaching powder is:
a) 12% b) 35% c) 58% d) 85%
811. Complete fertilizer is that supplies to the soil:
a) S, K, and N b) N, K and P c) S, K and P d) S and N
812. The element which liberates O_2 from water is:
a) Na b) Ca c) F d) N
813. SF_6 exists but OF_6 does not because:
a) *d*-orbitals of sulphur are vacant and are available for bonding
b) More bonding electrons can be accommodated in orbitals with $n = 3$
c) Sulphur has larger ionization energy than oxygen
d) The difference of electronegativity is less between oxygen and fluorine
814. N_2O_4 molecule is completely changed into 2NO_2 molecules at:
a) -10°C b) $140 - 150^\circ\text{C}$ c) 420°C d) -40°C
815. Out of (i) XeO_3 (ii) XeOF_4 and (iii) XeF_6 , the molecules having same number of lone pairs on Xe are:
a) (i) and (ii) only b) (i) and (iii) only c) (ii) and (iii) only d) (i), (ii) and (iii)
816. Chlorous acid and its salts (chlorites) are:
a) Good oxidising agents
b) Good reducing agents
c) Good bleaching agents
d) Good oxidising and bleaching agents
817. Antimony burns in chlorine to form:
a) SbCl_3 b) SbCl_2 c) SbOCl_2 d) SbCl_5
818. Bromargyrite is a mineral of:
a) Pb b) Sn c) I_2 d) Br_2
819. Helium is used in gas balloons instead of hydrogen because:
a) It is lighter than H_2
b) It is non-combustible
c) It is more abundant than H_2
d) Its leakage can be detected easily
820. Reaction of PCl_3 and PhMgBr would give
a) Bromobenzene b) Chlorobenzene
c) Triphenylphosphite d) Dichlorobenzene
821. Which does not give ammonia with water?
a) Mg_3N_2 b) AlN c) CaCN_2 d) $\text{Ca}(\text{CN})_2$
822. Bond length is maximum in:
a) HI b) HBr c) HCl d) HF
823. Nitrogen molecule is chemically less active because it has a between two nitrogen atoms.

- a) Single bond b) Double bond c) Triple bond d) Coordinate bond
824. If Cl_2 gas is passed into aqueous solution of KI containing some CCl_4 and the mixture is shaken, then:
 a) Upper layer becomes violet
 b) Lower layer becomes violet
 c) Homogeneous violet layer is formed
 d) None of the above
825. In NO_3^- ion, the number of bond pair and lone pair of electrons on nitrogen atom are:
 a) 2, 2 b) 3, 1 c) 1, 3 d) 4, 0
826. Cl_2 is used in the manufacture of:
 a) Chloroform b) CCl_4 c) Westron d) All of these
827. Which element shows polymorphism?
 a) O b) S c) Se d) All of these
828. N_2O is formed on reaction with dil. HNO_3 with:
 a) Cu b) Hg c) Ag d) Fe
829. The inert gases present in atmosphere are:
 a) He and Ne b) He, Ne and Ar c) He, Ne, Ar and Kr d) He, Ne, Ar, Kr and Xe
830. Orthophosphoric acid is ionized in.....steps.
 a) 1 b) 2 c) 3 d) 4
831. In the clathrates of xenon with water, the nature of bonding between xenon and water molecule is:
 a) Covalent
 b) Hydrogen bonding
 c) Coordinate
 d) Dipole-induced dipole
832. Which one is least soluble in water?
 a) BaF_2 b) CaF_2 c) SrF_2 d) MgF_2
833. If $\text{NO}_2(\text{N}_2\text{O}_4)$ is dissolved in NaOH, we get solution of ?
 a) NaNO_2 b) NaNO_3
 c) Mixture of NaNO_2 and NaNO_3 d) NaNO_4
834. The bond angles in OF_2 , OCl_2 and OBr_2 show the order:
 a) $\text{OF}_2 > \text{OCl}_2 > \text{OBr}_2$ b) $\text{OF}_2 > \text{OBr}_2 > \text{OCl}_2$ c) $\text{OBr}_2 > \text{OCl}_2 > \text{OF}_2$ d) $\text{OCl}_2 > \text{OBr}_2 > \text{OF}_2$
835. Xenon tetrafluoride has hybridisation and structure as:
 a) sp^3 tetrahedral b) $sp^3 d^2$ square planar c) $sp^3 d^2$ pyramidal d) $sp^3 d^3$ octahedral
836. The atomicity of phosphorus is X and the PPP bond angle in the molecule is Y . what are X and Y ?
 a) $X=4, Y=90^\circ$ b) $X=4, Y=60^\circ$ c) $X=3, Y=120^\circ$ d) $X=2, Y=180^\circ$
837. Bottle of PCl_5 is kept stoppered because it:
 a) Explodes b) Get oxidized c) Is volatilized d) Reacts with moisture
838. Sometimes a yellow turbidity appears while passing H_2S gas even in the absence of II group radicals. This is because:
 a) Sulphur is present in the mixture as impurity
 b) IV group radicals are precipitated as sulphides
 c) Of the oxidation of H_2S gas by some acid radicals
 d) III group radicals are precipitated as hydroxides
839. The oxidation of thiosulphate ion by iodine gives:
 a) SO_3^{2-} b) SO_4^{2-} c) $\text{S}_2\text{O}_8^{2-}$ d) $\text{S}_4\text{O}_6^{2-}$
840. Rain water sometimes contains NH_4NO_3 because lightening in the sky causes the air to react and produce oxides of nitrogen and:
 a) H_2 b) NH_3 c) CO_2 d) Noble gases
841. The number of molecules of water needed to convert one molecule of P_2O_5 into orthophosphoric acid is:
 a) 2 b) 3 c) 4 d) 5
842. Which of the following is the correct order of increasing enthalpy of vaporization?

- a) $\text{NH}_3 < \text{PH}_3 < \text{AsH}_3$ b) $\text{AsH}_3 < \text{PH}_3 < \text{NH}_3$ c) $\text{PH}_3 < \text{AsH}_3 < \text{NH}_3$ d) $\text{NH}_3 < \text{AsH}_3 < \text{PH}_3$
843. Which of the following was previously known as muriatic acid?
 a) Cl_2 b) Br_2 c) HCl d) H_2SO_4
844. Which metal forms an amphoteric oxide?
 a) Cr b) Fe c) Cu d) Zn
845. H_2SO_4 is added while preparing a standard solution of Mohr's salt to prevent:
 a) Hydration b) Reduction c) Hydrolysis d) Complex formation
846. The element which catches fire in air at 30°C and is stored under water is
 a) Sodium b) Phosphorus c) Magnesium d) Zinc
847. Which are solid?
 a) XeF_2 b) XeF_4 c) XeF_6 d) All of these
848. Cl_2O is an anhydride of:
 a) HClO_4 b) HOCl c) Cl_2O_3 d) HClO_2
849. Ammonium dichromate is used in some fireworks. The green coloured powder blown is:
 a) CrO_3 b) Cr_2O_3 c) Cr d) $\text{CrO}(\text{O}_2)$
850. An element forms a gaseous oxide which on dissolving in water gives an acid solution. The element is:
 a) S b) Na c) P d) H
851. PCl_3 and cold water reacts to produce which of the following ?
 a) H_3PO_3 b) H_3PO_2 c) $\text{H}_4\text{P}_2\text{O}_7$ d) H_3PO_4
852. Ammonia on heating with carbon dioxide under pressure gives:
 a) NH_4HCO_3 b) $(\text{NH}_4)_2\text{CO}_3$ c) $\text{NH}_2\text{COONH}_4$ d) $(\text{NH}_4)_2\text{CO}$
853. The acid which forms two series of salts:
 a) H_3PO_4 b) H_3PO_3 c) H_3BO_3 d) H_3PO_2
854. The structure of white phosphorus is:
 a) Square planar b) Pyramidal c) Tetrahedral d) Trigonal planar
855. Which of the following is strongest oxidizing agent?
 a) I_2 b) Br_2 c) Cl_2 d) F_2
856. If 20% nitrogen is present in a compound, its minimum molecular weight can be:
 a) 144 b) 70 c) 100 d) 140
857. Which sulphide is insoluble in yellow ammonium sulphide?
 a) SnS b) As_2S_3 c) Sb_2S_3 d) Bi_2S_3
858. Which one is most basic in character?
 a) F^- b) Cl^- c) Br^- d) I^-
859. Which oxide is alkaline?
 a) P_2O_3 b) B_2O_3 c) Bi_2O_3 d) As_2O_3
860. Fluorine oxidises HSO_4^- to:
 a) $\text{S}_2\text{O}_3^{2-}$ b) $\text{S}_2\text{O}_8^{2-}$ c) $\text{S}_4\text{O}_6^{2-}$ d) SO_2
861. Oleum is chemically
 a) H_2SO_3 b) H_2SO_5 c) $\text{H}_2\text{S}_2\text{O}_7$ d) $\text{H}_2\text{S}_2\text{O}_8$
862. Among halogens maximum oxides are formed by:
 a) Fluorine b) Chlorine c) Bromine d) Iodine
863. Which statement is false?
 a) Radon is obtained from the decay of radium.
 b) Helium is an inert gas.
 c) The most abundant noble gas in the atmosphere is He.
 d) Xe is the most reactive among the noble gases.
864. Freons are used as:
 a) Refrigerant b) Catalyst c) Oxidant d) None of these
865. Sulphur molecule exists as:
 a) S_2 b) S_4 c) S_6 d) S_8

866. Noble gases are adsorbed by
 a) Anhydrous calcium chloride
 b) Ferric hydroxide
 c) Conc. H_2SO_4
 d) Activated coconut charcoal
867. Phosphorus when exposed to air burns spontaneously because:
 a) The reaction is endothermic
 b) The reaction is exothermic
 c) The activation energy is very low
 d) Air contains some catalytic agent
868. There is O—O bond is:
 a) $\text{S}_2\text{O}_8^{2-}$
 b) $\text{S}_4\text{O}_6^{2-}$
 c) SO_3^{2-}
 d) $\text{S}_2\text{O}_7^{2-}$
869. Freons are:
 a) CCl_2F_2
 b) CFCl_3
 c) CClF_3
 d) All of these
870. Normality of pure sulphuric acid is:
 a) 4 *N*
 b) 12 *N*
 c) 24 *N*
 d) 36 *N*
871. The number of S – S bonds in sulphur trioxide
 a) Three
 b) Two
 c) One
 d) Zero
872. The number of electrons present in the valency shell of P in PCl_3 is:
 a) 12
 b) 10
 c) 8
 d) 18
873. A hydride of nitrogen which is acidic is
 a) N_3H
 b) N_2H_2
 c) NH_3
 d) N_2H_4
874. Which of the following compound show sublimation?
 a) CaHPO_3
 b) NH_4Cl
 c) BaSO_4
 d) CaCO_3
875. The highest ionization potential in a period is shown by:
 a) Alkaline earth metals
 b) Alkali metals
 c) Halogens
 d) Noble gases
876. $\text{K}_2[\text{HgI}_4]$ detects the ion/group:
 a) NH_2
 b) NO
 c) NH_4^+
 d) Cl^-
877. The percentage of nitrogen in urea is about:
 a) 70
 b) 63
 c) 47
 d) 28
878. Phosphate mineral of phosphorus is:
 a) $\text{Fe}_3(\text{PO}_4)_2\text{H}_2\text{O}$
 b) $\text{Ca}_3(\text{PO}_4)_2$
 c) $3\text{Ca}_3(\text{PO}_4)_2 \cdot \text{CaF}_2$
 d) $3\text{Ca}_3(\text{PO}_4)_2 \cdot \text{CaCl}_2$
879. Dithionic acid has the formula:
 a) $\text{H}_2\text{S}_2\text{O}_6$
 b) H_2SO_5
 c) $\text{H}_2\text{S}_2\text{O}_8$
 d) $\text{H}_2\text{S}_2\text{O}_5$
880. A person working with phosphorus suffers from a disease in which bones decay. It is known as
 a) Arthritis
 b) Phossy jaw
 c) Rickets
 d) cancer
881. A salt *X* gives white precipitates with lead acetate solution, insoluble in hot water and nitric acid. The salt *X* most probably contains:
 a) Cl^-
 b) Ba^{2+}
 c) SO_4^{2-}
 d) CO_3^{2-}
882. S – S bond is present in
 a) $\alpha - (\text{SO}_3)_n$
 b) $\gamma - (\text{S}_3\text{O}_9)$
 c) $\text{H}_2\text{S}_2\text{O}_3$
 d) $\text{H}_2\text{S}_2\text{O}_8$
883. NH_3 molecule can enter into complex formation through:
 a) Ionic bond
 b) Covalent bond
 c) Coordinate bond
 d) Electron deficient bond
884. Bromine can be liberated from KBr solution by the action of
 a) KI
 b) NaCl
 c) Cl_2
 d) I_2 solution
885. The oxidation state of Xe and XeO_3 and the bond angle in it respectively are
 a) +6, 109°
 b) +8, 103°
 c) +6, 103°
 d) +8, 120°
886. Among the following nitrates, lead nitrate, silver nitrate, sodium nitrate and ammonium nitrate; the one that decomposes without leaving any solid residue is

- a) Ammonium nitrate b) Sodium nitrate c) Silver nitrate d) Lead nitrate
887. Ammonia and phosphine resemble each other in:
- a) Solubility in water
b) Forming salt with acid
c) Stability
d) Reducing character
888. In the compound of type POX_3 , P atoms show multiple bonding of the type:
- a) $p\pi - d\pi$ b) $d\pi - d\pi$ c) $p\pi - p\pi$ d) No multiple bonding
889. Tear gas is:
- a) $COCl_2$ b) $CaOCl_2$ c) NH_3 d) $CCl_3 \cdot NO_2$
890. Which statement is not correct about $(CN)_2$?
- a) It is poisonous gas
b) It is called pseudohalogen
c) It is named as cyanogen
d) None of the above
891. When ammonium chloride is heated with NaOH, a gas is evolved, which has
- a) Pungent odour b) Smell of rotten eggs c) Smell of ammonia d) No smell
892. When phosphine is bubbled through solution of silver nitrate.....is precipitated.
- a) Silver b) Silver phosphide c) Silver oxide d) None of these
893. Hydrolysis of one mole of peroxodisulphuric acid produces:
- a) Two moles of sulphuric acid
b) Two moles of peroxomonosulphuric acid
c) One mole of sulphuric acid and one mole of peroxomonosulphuric acid
d) One mole each of sulphuric acid, peroxomonosulphuric acid and hydrogen peroxide
894. Which has the same electronic configuration as of inert gas?
- a) Ag^{3+} b) Cu^{2+} c) Pb^{4+} d) Ti^{4+}
895. Glacial phosphoric acid is:
- a) H_3PO_4 b) HPO_3 c) $H_4P_2O_7$ d) H_3PO_2
896. Which of the following pairs is not correctly matched?
- a) A halogen which is liquid at room temperature—bromine
b) The most electronegative element—fluorine
c) The most reactive halogen—fluorine
d) The strongest oxidizing agent—iodine
897. Nitrous oxide is known as
- a) Laughing gas b) Laboratory gas c) Breathing gas d) Exercising gas
898. The number of hydrogen atom (s) attached to phosphorus atom in pyrophosphorus acid is
- a) Zero b) One c) Two d) Three
899. Which of the following is not correct?
- a) Ammonia is used as refrigerant
b) A mixture of $Ca(CN)_2$ and C is known as nitrolim
c) A mixture of $Ca(H_2PO_4)_2$ and $CaSO_4 \cdot 2H_2O$ is known as superphosphate of lime
d) Hydrolysis of NCl_3 give NH_3 and $HOCl$
900. Which halide does not hydrolyse?
- a) $SbCl_3$ b) $AsCl_3$ c) PCl_3 d) NF_3
901. The noble gas mixture is cooled in a coconut bulb at 173k. the gases that are not absorbed are
- a) Ne and Xe b) He and xe c) Ar and Kr d) He and Ne
902. In the reaction $H_2S + O_3 \rightarrow \dots$, the products are:
- a) H_2O, S, O_2 b) $H_2SO_4 + O_2$ c) $H_2O + S$ d) $SO_2 + H_2$
903. When PCl_5 reacts with sulphuric acid, sulphuryl chloride (SO_2Cl_2) is formed as the final product .this shows that sulphuric acid

- a) Has two hydroxyl groups in its structure
 c) Is a dibasic acid
- b) Is a derivative of sulphur dioxide
 d) Has greater affinity for water
904. Caliche is:
- a) Crude saltpetre b) Impure nitre c) Impure carnallite d) Ashes of sea-weeds

905. The number of paired electron in oxygen molecule are

- a) 14 b) 8 c) 16 d) 12

906. The number of sigma bonds in P_4O_{10} is:

- a) 6 b) 16 c) 20 d) 7

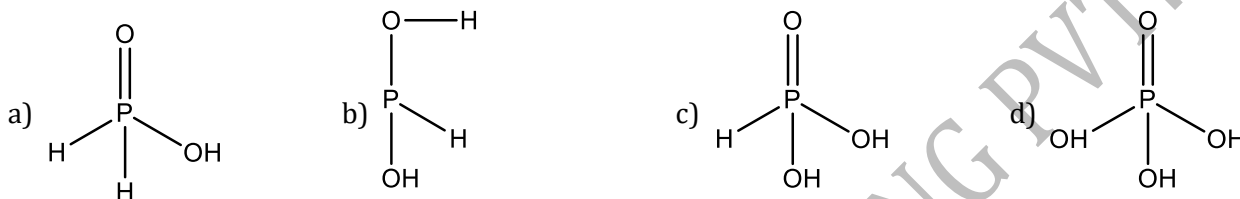
907. Bleaching action of SO_2 is due to

- a) Reduction b) Hydrolysis c) Oxidation d) Acidic nature

908. Nitrogen is produced when $NaNO_2$ is heated with:

- a) NH_4Cl b) NH_4NO_3 c) $(NH_4)_2CO_3$ d) NH_4OH

909. The structural formula of hypophosphorous acid is



910. Which of the following compounds gives chlorine dioxide when it reacts with SO_2 in the presence of acid?

- a) Sodium chloride b) Sodium chlorate c) Sodium perchlorate d) Sodium chlorite

911. The hydride of group 16 elements showing maximum tendency for complex formation is

- a) H_2Te b) H_2O c) H_2S d) H_2Se

912. The noble gas which forms interstitial compounds is

- a) Helium b) Argon c) Neon d) Xenon

913. Iodine may be liberated from sodium iodate by:

- a) H_2SO_4 b) $NaHSO_3$ c) $KMnO_4$ d) HCl

914. Which oxide is of different type than others?

- a) MnO_2 b) PbO_2 c) TiO_2 d) Na_2O_2

915. Oxide of nitrogen used as a catalyst in the lead chamber process for the manufacture of sulphuric acid is:

- a) NO b) N_2O c) N_2O_3 d) N_2O_5

916. When excess of KI is added to copper sulphate solution:

- a) Cuprous iodide is formed
 b) I_2 is liberated
 c) Potassium iodide is oxidized
 d) All of the above

917. The spectrum of helium is similar to:

- a) H b) Na c) Li^+ d) He^+

918. The reaction of P_4 with X leads selectively to P_4O_6 the X is

- a) dry O_2 b) A mixture of O_2 and N_2
 c) Moist O_2 d) O_2 in the presence of aqueous $NaOH$

919. $PH_4I + NaOH$ forms:

- a) PH_3 b) NH_3 c) P_4O_6 d) P_4O_{10}

920. When fluoride is heated with conc. H_2SO_4 and MnO_2 the gas evolved is:

- a) HF b) MnF_2 c) F_2 d) None of these

921. Which would quickly absorb oxygen?

- a) Alkaline solution of pyrogalllic acid
 b) Concentrated sulphuric acid
 c) Lime water
 d) Alkaline solution of copper sulphate

922. The compound used as refrigerant is:

- a) CCl_4 b) COCl_2 c) CF_4 d) CF_2Cl_2
923. Phosphine is not obtained by the reaction when:
 a) White P is heated with NaOH
 b) Red P is heated with NaOH
 c) Ca_3P_2 reacts with water
 d) Phosphorus trioxide is boiled with water
924. Nitrogen forms Oxides.
 a) 3 b) 4 c) 5 d) 6
925. Some of the reasons of reacting NH_3 with hydrogen chloride are given below. The incorrect is:
 a) The nitrogen atom of NH_3 gains electrons
 b) NH_3 can give a pair of electrons
 c) A proton in HCl can accept an electron pair from NH_3
 d) The Cl^- ion formed has a stable configuration
926. The compound of Sulphur that can be used as refrigerant is:
 a) S_2Cl_2 b) SO_2 c) SO_3 d) H_2SO_4
927. Oxygen can be obtained from bleaching powder by:
 a) Adding dilute acid
 b) Passing carbon dioxide
 c) Heating with a cobalt salt
 d) Adding alkalis
928. The catalyst used in the manufacture of ammonia is
 a) V_2O_5 b) Pt c) Fe d) $\text{Ni}(\text{CO})_4$
929. F_2 is largely used in:
 a) Making Freon b) Making Teflon c) Rocket fuels d) All of these
930. Substance used in Holme's signal is:
 a) NH_3 b) PH_3 c) PH_5 d) P_2O_5
931. Which one of the following combines with Fe (II) ions to form a brown complex?
 a) NO b) N_2O c) N_2O_3 d) N_2O_5
932. All the three atoms of ozone are used up when it reacts with:
 a) H_2O_2 b) PbS c) KI d) SO_2
933. Which can act as an acid in sulphuric acid?
 a) HNO_3 b) H_3PO_4 c) HClO_4 d) H_2O
934. SO_2 reduces cupric ion to cuprous ion in presence of:
 a) KOH b) H_2O c) KCNS d) H_2SO_4
935. On heating a salt with NaOH, smell of NH_3 is obtained. The salt contains:
 a) NH_4^+ b) NO_3^- c) NO_2^- d) CH_3COO^-
936. The catalyst used in the manufacture of HNO_3 by Ostwald's process is:
 a) Platinum black b) Finely divided nickel c) Vanadium pentoxide d) Platinum gauze
937. Which is used in vulcanisation of rubber?
 a) SF_6 b) SF_4 c) SF_2 d) S_2Cl_2
938. Superphosphate of lime is obtained from the reaction of:
 a) Calcium carbonate with phosphoric acid
 b) Calcium phosphate with hydrochloric acid
 c) Calcium phosphate with sulphuric acid
 d) Bones with gypsum
939. The anhydride of orthophosphoric acid is:
 a) P_4O_{10} b) P_2O_5 c) P_4O_6 d) P_2O_3
940. Which is bad conductor of electricity?
 a) H_2F_2 b) HCl c) HBr d) HI
941. Which compound has an incorrect formula?
 a) Thionyl chloride— SOCl_2

- b) Sulphuryl chloride— SO_2Cl_2
 c) Oleum— $\text{H}_2\text{S}_2\text{O}_6$
 d) Phosphorus oxychloride— POCl_3
942. Chromium dissolves in dil. H_2SO_4 to form $\text{Cr}(\text{H}_2\text{O})_6^{2+}$. The colour of the ion is:
 a) Blue b) Green c) Yellow d) Orange
943. The oxide that is not reduced by hydrogen in the hot is:
 a) Ag_2O b) Fe_2O_3 c) CuO d) K_2O
944. Bleaching action of SO_2 is due to its
 a) Oxidizing property b) Acidic property c) Basic property d) Reducing property
945. The chloric acid and chlorates are:
 a) Good oxidizing agents
 b) Bleaching agents
 c) Undergo disproportionation on heating
 d) All of the above
946. The oxidation number of xenon in XeOF_2 is
 a) Zero b) 2 c) 4 d) 3
947. Which metal liberates H_2 with dil. nitric acid?
 a) Zn b) Cu c) Mn d) Hg
948. When dry chlorine is passed over silver chlorate at 460 K, the product is:
 a) Cl_2O b) ClO_2 c) ClO_3 d) ClO_4
949. FeCl_3 solution on reaction with SO_2 changes to:
 a) FeCl_2 b) $\text{Fe}_2(\text{SO}_4)_3$ c) $\text{Fe}_2(\text{SO}_3)_3$ d) FeSO_4
950. Which of the following is known as Berthelot's salt?
 a) $(\text{NaPO}_3)_6$ b) NaOCl c) KClO_3 d) KHF_2
951. Pb reacts with dilute HNO_3 gives
 a) NO b) NH_4NO_3 c) N_2O_5 d) NO_2
952. The chemical used for cooling in refrigeration or in manufacture of ice is:
 a) CS_2 b) NH_4OH c) NH_4Cl d) Liquid NH_3
953. If an allotropic form changes slowly to a stable form. It is called
 a) Enantiotropy b) Dynamic allotropy c) Monotropy d) None of these
954. The percentage of N_2 in air is:
 a) 75% by weight b) 78.7% by volume c) Both (a) and (b) d) None of these
955. Xenon best reacts with:
 a) The most electropositive element
 b) The most electronegative element
 c) The hydrogen halides
 d) Non-metals
956. 98% H_2SO_4 is:
 a) Pyrosulphuric acid b) Oleum c) Azeotropic mixture d) None of these
957. Excess of KI reacts with CuSO_4 solution and then $\text{Na}_2\text{S}_2\text{O}_3$ solution is added to it. Which of the statement is incorrect for this reaction?
 a) Evolved I_2 is reduced b) CuI_2 is formed c) $\text{Na}_2\text{S}_2\text{O}_3$ is oxidised d) Cu_2I_2 is formed
958. The gas used in the manufacture of ice-cream is:
 a) CO_2 b) N_2O c) NO d) N_2O_3
959. A white precipitate is obtained on hydrolysis of:
 a) PCl_5 b) NCl_3 c) BiCl_3 d) AsCl_3
960. The equation, $2\text{KClO}_3 \rightarrow 2\text{KCl} + 3\text{O}_2$ indicates all of the following, except:
 a) New compounds are formed
 b) The reaction is exothermic
 c) The law of conservation of mass is obeyed

- d) The amount of KClO_3 decomposes
961. In a given sample of bleaching powder the percentage of available chlorine is 49. The volume of chlorine obtained if 10 g of the sample is treated with HCl at NTP is:
 a) 1.5 litre b) 3.0 litre c) 15.0 litre d) 150 litre
962. Which one has the highest percentage of nitrogen?
 a) Calcium nitrate b) Ammonium sulphate
 c) Urea d) Ammonium nitrate
963. Which has maximum pH in aqueous solution?
 a) NaClO b) NaClO_2 c) NaClO_3 d) NaClO_4
964. Which of the following is not a drying and dehydrating agent?
 a) Silica gel b) P_2O_5 c) Conc. H_2SO_4 d) Hydrated CaCl_2
965. The compound that attacks pyrex glass is:
 a) XeF_2 b) XeF_4 c) XeF_6 d) None of these
966. In the reaction $\text{K} + \text{SO}_2 \rightarrow \dots$, the products are:
 a) $\text{KO}_2 + \text{S}$ b) $\text{K}_2\text{SO}_3 + \text{K}_2\text{S}_2\text{O}_3$ c) K_2SO_4 d) None of these
967. $\text{Cl}(\text{OH})$ is:
 a) An oxide b) A chloride c) A hydride d) An acid
968. Which of the following occurs in free state?
 a) N b) P c) As d) Sb
969. Which one is not an acid salt?
 a) NaH_2PO_2 b) NaH_2PO_3 c) NaH_2PO_4 d) None of these
970. Oxygen is gas but sulphur is solid because:
 a) Oxygen is composed of discrete molecules while sulphur is polymeric
 b) Molecular weight of sulphur is much higher than that of oxygen
 c) Oxygen is a stronger oxidizing agent than sulphur
 d) Boiling point of sulphur is much higher than that of oxygen
971. In contact process impurities of arsenic are removed by:
 a) $\text{Al}(\text{OH})_3$ b) $\text{Fe}(\text{OH})_3$ c) $\text{Cr}(\text{OH})_3$ d) Fe_2O_3
972. Concentrated sulphuric acid does not act as:
 a) Efflorescent b) Hygroscopic c) Oxidizing agent d) Sulphonating agent
973. Which halogen does not react with water?
 a) F_2 b) Cl_2 c) Br_2 d) I_2
974. Which hydride is most acidic?
 a) H_2O b) H_2S c) H_2Te d) H_2Se
975. The discovery of isotopes began with the experiments with:
 a) Xe b) Kr c) Ar d) Ne
976. In the oxo-acids of chlorine $\text{Cl}-\text{O}$ bond contains:
 a) $d\pi - d\pi$ bonding b) $p\pi - d\pi$ bonding c) $p\pi - p\pi$ bonding d) None of these
977. Arsenic acid is:
 a) H_3AsO_3 b) H_3AsO_4 c) H_2AsO_4 d) HAsO_4
978. The halogen that is most readily reduced is:
 a) Chlorine
 b) Bromine
 c) Iodine
 d) Fluorine
979. The bond angle $\text{O}-\text{S}-\text{O}$ and hybridization of sulphur in SO_2 are:
 a) $119.5^\circ, sp^3$ b) $119.5^\circ, sp^2$ c) $109^\circ 28', sp^3$ d) None of these
980. Which of the element of nitrogen family produce maximum number of oxy-acids?
 a) N b) P c) As d) Sb
981. Halogens are placed in the VIIA group or gp. 17 of the periodic table, because:

- a) They are non-metals
 b) They are very reactive
 c) They are electronegative
 d) They have 7 electrons in outermost orbit
982. Nitrosyl chloride is:
 a) NOCl b) NOCl₂ c) NO₂Cl₂ d) N₂OCl₂
983. Which of the following gives M³⁺ ion most readily?
 a) P b) N c) Sn d) As
984. There is very little difference in acid strength in the acids H₃PO₄, H₃PO₃, H₃PO₂ because:
 a) Phosphorus in these acids exists in different oxidation states
 b) The hydrogen in these acids are not all bound to the phosphorus and have same number of unprotonated oxygen
 c) Phosphorus is highly electronegative element
 d) Phosphorus oxides are less basic
985. Among the following molecule (i) XeO₃ (ii) XeOF₄ (iii)XeF₆
 Those having same number of lone pairs on Xe are
 a) (i) and (iii) only b) (i) and (ii) only c) (ii) and (iii) only d) (i), (ii) and (iii)
986. Which possesses highest percentage of ionic character?
 a) HCl b) HBr c) HF d) HI
987. Bleaching powder slowly loses its activity when it stands in air. This is due to:
 a) Reaction with moisture to liberate O₂
 b) Auto oxidation
 c) Loss of CaCl₂
 d) Formation of Ca(OH)₂
988. Which statement is false?
 a) NH₃ is a Lewis base
 b) NH₃ molecule is triangular planar
 c) NH₃ does not act as reducing agent
 d) NH₃ (liquid) is used as a solvent
989. The number of hydrogen atom(s) attached to phosphorus atom in hypophosphorus acid is ?
 a) Three b) One c) Two d) Zero
990. Which one of the following cations does not form a complex with ammonia?
 a) Ag⁺ b) Cu²⁺ c) Cd²⁺ d) Pb²⁺
991. In the laboratory H₂S gas is prepared by using black lumps and dil. H₂SO₄. The black lumps are
 a) FeSO₄ b) MnO₂ c) FeS d) FeSO₃
992. Nuclear fusion produces
 a) Argon b) Deuterium c) Helium d) Krypton
993. Which possesses least stable covalent P—H bond?
 a) PH₃ b) P₂H₆ c) P₂H₅ d) PH₆⁺
994. The correct order of the thermal stability of hydrogen halides (H – X) is
 a) HI>HCl<HF>HBr b) HCl<HF>HBr<HI c) HF>HCl>HBr>HI d) HI>HBr>HCl>HF
995. Noble gases can be separated by:
 a) Passing them through some solutions
 b) Electrolysis of their compounds
 c) Adsorption and desorption on coconut charcoal
 d) None of the above
996. Which of the following statements is not valid for oxoacids of phosphorus?
 a) All oxoacids contain tetrahedral four coordinated phosphorus
 b) All oxoacids contains atleast one P = O unit and one P—OH group
 c) Orthophosphoric acid is used in the manufacture of triple superphosphate

- d) Hypophosphorous acid is a diprotic acid
997. Which statement is not true for astatine?
- It is less electronegative than iodine
 - It exhibits only -1 oxidation state
 - Intermolecular forces between the astatine molecules will be larger than between the iodine molecules
 - It is composed of diatomic molecules
998. The only element in VIA group or group 16 elements, which is definitely a metal, is:
- Tellurium
 - Selenium
 - Sulphur
 - Polonium
999. The increasing order of reactivity of halogens is:
- $I_2 < Br_2 < Cl_2 < F_2$
 - $Cl_2 < F_2 < Br_2 < I_2$
 - $Cl_2 < Br_2 < I_2 < F_2$
 - $I_2 < Cl_2 < Br_2 < F_2$
- 100 Coconut charcoal at -100°C adsorbs a mixture of:
- He and Kr
 - Ar, Kr and Xe
 - Kr and Xe
 - He and Ne
- 100 Clathrates are
- Non-stoichiometric compounds
 - Complex compounds
 - Interstitial compounds
 - Ionic compounds
- 100 Two pungent smelling gases bleach a certain substance. The gases may be:
- Cl_2 and SO_2
 - Cl_2 and NH_3
 - NH_3 and PH_3
 - O_2 and CO_2
- 100 Nitrogen is an essential constituent of all:
- Proteins
 - Fats
 - Proteins and fats
 - None of these
- 100 Mark the halogen which shows electropositive character:
- F
 - Cl
 - Br
 - I
- 100 Which of the following is called Berthelot's salt?
- $(NaPO_3)_6$
 - NaOCl
 - $KClO_3$
 - KHF_2
- 100 A compound which leaves behind no residue on heating is:
- $Cu(NO_3)_2$
 - KNO_3
 - NH_4NO_3
 - None of these
- 100 Phosphine on reaction with hydrobromic acid gives:
- PBr_3
 - PH_4Br
 - PBr_5
 - P_2H_4
- 100 Bleaching powder has the molecular formula:
- $CaClO_3$
 - CaClO
 - $CaOCl_2$
 - $Ca(OCl)_2$
- 100 Six volumes of oxygen, on complete ozonisation, form Volumes of ozone.
- 2
 - 4
 - 6
 - 3
- 101 Iodine solution stained on clothes can be removed by:
- NaCl
 - NaBr
 - $Na_2S_2O_3$
 - $Na_2S_4O_6$
- 101 The substance which does not liberate oxygen on treatment with ozone is
- PbS
 - HCl
 - SO_2
 - Hg
- 101 In the reaction $CaS + H_2S \rightarrow \dots$, the products are:
- $CaS_2 + H_2$
 - $CaS_3 + H_2$
 - $CaS_5 + H_2$
 - Ca + S
- 101 HI cannot be prepared by heating KI with conc. H_2SO_4 because:

3. a) H_2SO_4 is stronger acid than HI
 b) HI is stronger acid than H_2SO_4
 c) H_2SO_4 is an oxidizing agent
 d) HI is more volatile than H_2SO_4
- 101 Lead nitrate on heating gives lead oxide, nitrogen dioxide and oxygen. The reaction is known as:
4. a) Combustion b) Combination c) Displacement d) Decomposition
- 101 Which hydride is the strongest base?
5. a) AsH_3 b) NH_3 c) PH_3 d) SbH_3
- 101 Which forms maximum compounds with xenon?
6. a) F b) Cl c) Br d) I
- 101 Claude's process is used in the manufacture of:
7. a) N_2 b) NH_3 c) N_2O d) NO_2
- 101 Which is a saline oxide?
8. a) Na_2O_2 b) BaO_2 c) Na_2O d) Fe_2O_3
- 101 Which set of elements has the strong tendency to form anions?
9. a) N, O, F b) P, S, Cl c) As, Se, Br d) Sb, Te, I
- 102 Light blue colour of nitrous acid is due to dissolved:
0. a) O_2 b) N_2 c) N_2O d) N_2O_3
- 102 Which one of the following pairs of reactants does not form oxygen when they react with each other?
1. a) F_2 , NaOH solution (hot, conc.) b) F_2 , H_2O
 c) Cl_2 , NaOH solution (cold, dilute) d) CaOCl_2 , H_2SO_4 , (dilute, small amount)
- 102 Oxide of a non-metal possesses the following characteristics: (i) It is both a proton donor and proton acceptor. (ii) It is poor conductor of electricity. (iii) It reacts readily with basic and acidic oxides. (iv) It oxidises Fe at boiling point. The oxide is:
2. a) H_2O b) CO_2 c) H_2O_2 d) NO
- 102 Most unstable hydride is
3. a) NH_3 b) PH_3 c) AsH_3 d) BiH_3
- 102 Phosphide ion has the electronic structure similar to that of:
4. a) Nitride ion b) Chloride ion c) Fluoride ion d) Sodium ion
- 102 The gaseous mixture used by deep sea divers for respiration is:
5. a) $\text{N}_2 + \text{O}_2$ mixture b) $\text{He} + \text{O}_2$ mixture c) $\text{Ar} + \text{O}_2$ mixture d) $\text{Ne} + \text{O}_2$ mixture
- 102 A gas that cannot be collected over water is
6. a) SO_2 b) N_2 c) O_2 d) PH_3
- 102 Which is used in the manufacture of safe matchsticks?
7. a) Red phosphorus b) Sulphur c) Selenium d) White phosphorus
- 102 Bond angle in O_3 molecule is:
- 8.

- a) $108^{\circ} 29'$ b) $108^{\circ} 28'$ c) $116^{\circ} 90'$ d) 120°
- 102 The noble gas which shows abnormal behaviour in liquid state and behave as super fluid is
9.
- a) Ne b) He c) Ar d) Xe
- 103 Which of the following is not hydrolysed?
0.
- a) PF_3 b) SbCl_3 c) AsCl_3 d) NF_3
- 103 NH_3 has a much higher boiling point than PH_3 because:
1.
- a) NH_3 has a higher molecular weight
b) NH_3 undergoes umbrella inversion
c) NH_3 forms hydrogen bond
d) NH_3 contains ionic bonds whereas PH_3 contains covalent bonds
- 103 An element belongs to group 15 and third period of the periodic table. Its electronic configuration will be
2.
- a) $1s^2 2s^2 2p^3$ b) $1s^2 2s^2 2p^4$ c) $1s^2 2s^2 2p^6 3s^2 3p^3$ d) $1s^2 2s^2 2p^6 3s^2 3p^2$
- 103 The reagent used for testing ammonia is:
3.
- a) Bayer's reagent b) Nessler's reagent c) Fenton's reagent d) Molisch reagent
- 103 Elements of nitrogen family having allotropic forms are:
4.
- a) N, Sb, Bi b) N, P, As, Sb c) As, Sb, Bi d) P, As, Bi
- 103 An example of tetrabasic acid is:
5.
- a) Orthophosphorus acid
b) Orthophosphoric acid
c) Metaphosphoric acid
d) Pyrophosphoric acid
- 103 Phosphoric acid is syrupy liquid due to:
6.
- a) Strong covalent bond b) Van der Waals' forces c) Hydrogen bonding d) None of these
- 103 Two oxides of nitrogen NO and NO_2 react together at 253°K and form a compound of nitrogen X. X reacts
7. with water to yield another compound of nitrogen Y.
The shape of the anion of Y molecule is
- a) Tetrahedral b) Triangular planar c) Square planar d) Pyramidal
- 103 The noble gas which forms maximum number of compounds is
8.
- a) Ar b) He c) Ne d) Xe
- 103 When conc. H_2SO_4 is heated with P_2O_5 , the acid is converted into
9.
- a) Sulphure trioxide
b) Sulphur dioxide
c) Sulphur
d) A mixture of sulphur dioxide and sulphur trioxide
- 104 The most reactive allotropic form of phosphorus is:
0.
- a) Red phosphorus b) Yellow phosphorus c) Black phosphorus d) Violet phosphorus
- 104 P_2O_5 when treated with cold water gives:
1.
- a) Orthophosphoric acid b) Metaphosphoric acid c) Pyrophosphoric acid d) Hypophosphoric acid
- 104 Sodium pyrophosphate is represented by which of the following formula?

2. a) $\text{Na}_2\text{P}_2\text{O}_4$ b) $\text{Na}_4\text{P}_2\text{O}_5$ c) $\text{Na}_4\text{P}_2\text{O}_7$ d) $\text{Na}_2\text{P}_2\text{O}_5$
- 104 Which of the following(s) when heated give nitrogen gas?
3. a) $(\text{NH}_4)_2\text{Cr}_2\text{O}_7$ b) $\text{Ba}(\text{N}_3)_2$ c) NH_4NO_3 d) Both a and b
- 104 Ozone is readily dissolved in:
4. a) Water b) Turpentine oil c) Carbon disulphide d) Ammonia
- 104 When AgNO_3 is heated strongly, the products formed are
5. a) NO and NO_2 b) NO_2 and N_2O c) NO and O_2 d) NO_2 and O_2
- 104 Agron was discovered by
6. a) Rayleigh b) Ramsay
c) Both (a) and (b) d) Frankland and Lockeyer
- 104 Phosphorus compound used as drying agent and desiccating agent is:
7. a) PCl_3 b) PCl_5 c) P_4O_{10} d) P_4O_6
- 104 How many bonding electron pairs are there in white phosphorus ?
8. a) 6 b) 12 c) 4 d) 8
- 104 Which of the following does not react with fluorine?
9. a) Kr b) Ar c) Xe d) All of these
- 105 Which of the following causes damage to the building containing calcium and responsible for cough and choking in human?
0. a) Sulphur b) Carbon c) Nitrogen dioxide d) Sulphur dioxide
- 105 ClO^- disproportionate into
1. a) Cl^- and O b) Cl^- and ClO_3^- c) Cl and O d) Cl^- and O^-
- 105 Hydrofluoric acid is not preserved in glass bottles because:
2. a) It reacts with the visible part of light
b) It reacts with the sodium oxide of the glass composition
c) It reacts with the aluminium oxide of the glass composition
d) It reacts with the silicon dioxide of glass
- 105 SO_2 acts as temporary bleaching agent but Cl_2 acts as permanent bleaching agent. why?
3. a) Cl_2 bleaches due to reduction but SO_2 due oxidation
b) Cl_2 bleaches due to oxidation but SO_2 due to reduction.
c) Both of the above
d) None of the above
- 105 Liquid ammonia bottles be opened after cooling them in ice for some time. It is because liquid NH_3 :
4. a) Brings tears in the eyes
b) Has a high vapour pressure
c) Is a corrosive liquid
d) Is a mild explosive
- 105 ... is the compound which can remove both oxygen and nitrogen of the air when it is passed over it at 1000°C.
5. a) CaC_2 b) CaCl_2 c) CaCN_2 d) $\text{Ca}(\text{CN})_2$

105 The crystals of ferrous sulphate on heating give:

6.

- a) $\text{FeO} + \text{SO}_2 + \text{H}_2\text{O}$
- b) $\text{Fe}_2\text{O}_3 + \text{H}_2\text{SO}_4 + \text{H}_2\text{O}$
- c) $\text{Fe}_2\text{O}_3 + \text{SO}_2 + \text{H}_2\text{SO}_4 + \text{H}_2\text{O}$
- d) $\text{FeO} + \text{SO}_3 + \text{H}_2\text{SO}_4 + \text{H}_2\text{O}$

105 Which one of the following reactions does not occur ?

7.

- a) $\text{F}_2 + \text{Cl}^- \rightarrow 2\text{F}^- + \text{Cl}_2$
- b) $\text{Cl}_2 + 2\text{F}^- \rightarrow 2\text{Cl}^- + \text{F}_2$
- c) $\text{Br}_2 + 2\text{I}^- \rightarrow 2\text{Br}^- + \text{I}_2$
- d) $\text{Cl}_2 + 2\text{Br}^- \rightarrow 2\text{Cl}^- + \text{Br}_2$

105 By the action of hot conc H_2SO_4 , phosphorus changes to

8.

- a) Phosphorous acid
- b) Metaphosphoric acid
- c) Pyrophosphoric acid
- d) Orthophosphoric acid

105 Which is an amphoteric oxide?

9.

- a) SO_2
- b) B_2O_3
- c) ZnO
- d) Na_2O

106 Anhydride of nitric acid is:

10.

- a) NO
- b) N_2O_3
- c) N_2O_4
- d) N_2O_5

106 Which of the following attacks glass:

11.

- a) HCl
- b) HF
- c) HI
- d) HBr

106 Which property of white phosphorus is common to red P?

12.

- a) It is soluble in carbon disulphide
- b) It shows chemiluminescence
- c) It reacts with hot caustic soda solution to give phosphine
- d) It burns when heated in air

106 Which one of the following pairs of substances when mixed, produces chlorine gas at room temperature?

13.

- a) NaCl and MnO_2
- b) NaCl and HNO_3 (conc)
- c) NaCl and H_2SO_4 (conc)
- d) HCl (conc) and KMnO_4

106 Oxygen is divalent, whereas sulphur exhibits valency of 2, 4 and 6 due to:

14.

- a) S is bigger atom
- b) Ionization potential of sulphur is more
- c) S being less electronegative than O
- d) Presence of *d*-orbitals in S

106 Which of the following elements is good conductor of electricity?

15.

- a) As
- b) Sb
- c) Bi
- d) All of these

106 Which one is known as oil of vitriol?

16.

- a) $\text{H}_2\text{S}_2\text{O}_7$
- b) H_2SO_3
- c) $\text{H}_2\text{S}_2\text{O}_8$
- d) H_2SO_4

106 The electrolysis of brine solution to manufacture chlorine is carried out in the:

17.

- a) Dennis cell
- b) Gray cell
- c) Nelson cell
- d) Solvay cell

106 The correct order of acidic strength is:

18.

- a) $\text{Al}_2\text{O}_3 < \text{SiO}_2 < \text{P}_2\text{O}_3 < \text{SO}_2$

- b) $\text{SiO}_2 < \text{SO}_2 < \text{Al}_2\text{O}_3 < \text{P}_2\text{O}_3$
 c) $\text{Al}_2\text{O}_3 < \text{SiO}_2 < \text{SO}_2 < \text{P}_2\text{O}_3$
 d) $\text{SO}_2 < \text{P}_2\text{O}_3 < \text{SiO}_2 < \text{Al}_2\text{O}_3$
- 106 Ozone molecule has geometry.
 9. a) Linear b) Triangular c) Tetrahedral d) None of these
- 107 Which is not true for ozone?
 0. a) It oxidizes lead sulphide
 b) It oxidizes potassium iodide
 c) It oxidizes mercury
 d) It cannot act as bleaching agent
- 107 The strongest oxidizing agent is:
 1. a) HNO_3 b) H_2SO_4 c) H_2SO_3 d) $\text{H}_2\text{S}_2\text{O}_3$
- 107 The oxidation states of phosphorus vary from:
 2. a) -1 to $+3$ b) -3 to $+3$ c) -3 to $+5$ d) -5 to $+1$
- 107 The following element forms a molecule with eight of its own atoms
 3. a) Si b) S c) Cl d) P
- 107 The correct order of acidic nature of oxides is in the order
 4. a) $\text{NO} < \text{N}_2\text{O} < \text{N}_2\text{O}_3 < \text{NO}_2 < \text{N}_2\text{O}_5$ b) $\text{N}_2\text{O} < \text{NO} < \text{N}_2\text{O}_3 < \text{NO}_2 < \text{N}_2\text{O}_5$
 c) $\text{N}_2\text{O}_5 < \text{NO}_2 < \text{N}_2\text{O}_3 < \text{NO} < \text{N}_2\text{O}$ d) $\text{N}_2\text{O}_5 < \text{N}_2\text{O}_3 < \text{NO}_2 < \text{NO} < \text{N}_2\text{O}$
- 107 Bleaching powder is mixed calcium salt of:
 5. a) HCl and HClO b) HClO_2 and HCl c) HClO and HClO_2 d) HCl and HClO_3
- 107 In compounds of type ECl_3 , where $E = \text{B, P, As}$ or Bi the angles $\text{Cl} - \text{E} - \text{Cl}$ for different E are in the order
 6. a) $\text{B} > \text{P} > \text{As} > \text{Bi}$ b) $\text{B} > \text{P} = \text{As} = \text{Bi}$ c) $\text{B} < \text{P} = \text{As} = \text{Bi}$ d) $\text{B} < \text{P} < \text{As} < \text{Bi}$
- 107 Bleaching properties of bleaching powder are due to its:
 7. a) Oxidizing properties
 b) Reducing properties
 c) Basic properties
 d) Disinfecting properties
- 107 One mole of calcium phosphide on reaction with excess water gives
 8. a) One mole of phosphorus pentoxide b) Two moles of phosphine
 c) One mole of phosphine d) Two moles of phosphoric acid
- 107 Which noble gas has the least tendency to form compounds?
 9. a) He b) Ne c) Kr d) Xe
- 108 Mixture used on tips of matchsticks is:
 0. a) S + K b) Antimony sulphide c) $\text{K}_2\text{Cr}_2\text{O}_7 + \text{S} + \text{red P}$ d) $\text{K}_2\text{Cr}_2\text{O}_7 + \text{K} + \text{S}$
- 108 A dark brown solid (X) reacts with NH_3 to form a mild explosive which decomposes to give a violet coloured gas. (X) also reacts with H_2 to give an acid (Y). (Y) can also be prepared by heating its salt with H_3PO_4 . X and Y are
 1. a) Cl_2, HCl b) $\text{SO}_2, \text{H}_2\text{SO}_4$ c) Br_2, HBr d) I_2, HI

- 108 The catalyst used in the manufacture of H_2SO_4 by contact process is
2.
a) V_2O_3 b) V_2O_5 c) FeO d) Cu
- 108 Which one is the strongest reducing agent?
3.
a) NH_3 b) AsH_3 c) SbH_3 d) PH_3
- 108 Which among the following statements are correct?
4.
(i) Carbon monoxide is neutral whereas SO_3 is acidic.
(ii) Potassium oxide is basic whereas nitrous oxide is acidic.
(iii) Aluminium and zinc oxides are amphoteric.
(iv) Sulphur trioxide is acidic whereas phosphorus pentoxide is basic.
(v) Carbon dioxide is neutral whereas sulphur dioxide is amphoteric
a) (ii) and (iii) b) (i) and (iv) c) (i) and (iii) d) (ii) and (iv)
- 108 Aqua fortis is:
5.
a) HNO_3 b) HNO_2 c) H_2NO_2 d) $\text{H}_2\text{N}_2\text{O}_2$
- 108 Which among the following is the strongest acid?
6.
a) HF b) HCl c) HBr d) HI
- 108 Which does not liberate O_2 on heating?
7.
a) MgO b) NaNO_3 c) Pb_3O_4 d) KClO_3
- 108 Late discovery of F_2 is due to its:
8.
a) High reactivity
b) High ionization potential
c) High electronegativity
d) High electron affinity
- 108 Peroxy acids are
9.
a) $\text{H}_2\text{S}_2\text{O}_3, \text{H}_2\text{S}_4\text{O}_6$ b) $\text{H}_2\text{S}_4\text{O}_6, \text{H}_2\text{SO}_5$ c) $\text{H}_2\text{SO}_5, \text{H}_2\text{S}_2\text{O}_8$ d) $\text{H}_2\text{S}_2\text{O}_3, \text{H}_2\text{S}_2\text{O}_8$
- 109 The pale-yellow coloured gas is:
10.
a) Cl_2 b) F_2 c) Br_2 d) I_2
- 109 Which of the following is a pseudohalogen?
1.
a) ICl_3 b) ICl_2^- c) $(\text{CN})_2$ d) N_3^-
- 109 Cl_2 reacts with CS_2 in presence of I_2 catalyst to form
2.
a) CHCl_3 b) $\text{C}_2\text{H}_5\text{Cl}$ c) CCl_4 d) C_2H_6
- 109 HBr and HI reduce sulphuric acid; HCl can reduce KMnO_4 and HF reduces:
3.
a) H_2SO_4 b) KMnO_4 c) $\text{K}_2\text{Cr}_2\text{O}_7$ d) None of these
- 109 A substance X when heated with sulphuric acid liberates a gas which turns starch paper blue. The
4. substance is:
a) NaCl b) NaBr c) NaI d) NaNO_3
- 109 NO_2 is not obtained on heating
5.
a) AgNO_3 b) KNO_3 c) $\text{Cu}(\text{NO}_3)_2$ d) $\text{Pb}(\text{NO}_3)_2$
- 109 Concentrated H_2SO_4 has great affinity for:
6.

- b) White phosphorus is metastable, while red phosphorus is stable
 c) White phosphorus is lighter than red phosphorus
 d) White phosphorus is highly poisonous, while red phosphorus is not
- 112 Which element does not form stable diatomic molecules?
 3.
 a) Iodine b) Phosphorus c) Nitrogen d) Oxygen
- 112 H_2S is a:
 4.
 a) Weak dibasic acid
 b) Weak monobasic acid
 c) Strong dibasic acid
 d) Strong monobasic acid
- 112 Ozone oxidises moist sulphur to:
 5.
 a) SO_2 b) SO_3 c) H_2SO_4 d) None of these
- 112 Which element reacts with chlorine to give pentachloride?
 6.
 a) P b) As c) Sb d) All of these
- 112 Xenon hexafluoride reacts with silica to form a xenon compound X. The oxidation state of xenon in X is
 7.
 a) +2 b) +4 c) +6 d) 0
- 112 Anomalous behavior of oxygen is due to:
 8.
 a) High electronegativity
 b) Small atomic size
 c) Non-availability of *d*-orbitals
 d) All of the above
- 112 In oxo-acids of halogen, $X = O$ bond is formed as a result of:
 9.
 a) $d\pi - d\pi$ overlapping b) $p\pi - p\pi$ overlapping c) $d\pi - p\pi$ overlapping d) either of these
- 113 Fuming nitric acid is:
 10.
 a) Conc. $HNO_3 + NO_2$ b) Conc. $HNO_3 + NO_3$ c) Conc. $HNO_3 + N_2O_3$ d) Conc. $HNO_3 + NO$
- 113 When NaCl or KCl is heated with conc. H_2SO_4 and solid $K_2Cr_2O_7$, we get:
 1.
 a) Chromic chloride
 b) Chromous chloride
 c) Chromyl chloride (CrO_2Cl_2)
 d) Chromic sulphate
- 113 Ozone is used for purifying water because
 2.
 a) It dissociates and release oxygen
 b) Do not leave any foul smell like chlorine.
 c) Kills bacteria, cyst, fungi and acts as a biocide.
 d) All of the above
- 113 Nitrogen is a relatively inactive element because:
 3.
 a) Its atom has a stable electronic configuration
 b) It has a low atomic radius
 c) Its electronegativity is fairly high
 d) Dissociation energy of its molecule is fairly high

113 The following species will not exhibit disproportionation reaction

4.

- a) ClO^- b) ClO_2^- c) ClO_3^- d) ClO_4^-

113 Which of the following is used to prepare Cl_2 gas at room temperature from concentrated HCl ?

5.

- a) MnO_2 b) H_2S c) KMnO_4 d) Cr_2O_3

113 Arsine is:

6.

- a) Solid b) Liquid c) Supersaturate liquid d) Gas

113 The arrangement of oxygen atoms around phosphorus atoms in P_4O_{10} is:

7.

- a) Pyramidal b) Octahedral c) Square planar d) Tetrahedral

113 Most of the elementary gases are obtained by chemical reaction of their compounds. For example, chlorine

8. is obtained by allowing KMnO_4 to react with hydrochloric acid. Fluorine, however, can be obtained only by the electrolysis of a fluoride. This is because:

- a) Fluorine is a highly reactive gas
b) Fluorine is the strongest chemical oxidizing agent
c) Fluorine is highly poisonous
d) It is easy to electrolyse a fluoride

113 The number of different oxides of chlorine is:

9.

- a) 3 b) 4 c) 5 d) 6

114 The gas which does not show oxidizing and bleaching properties is:

10.

- a) Chlorine b) Ozone c) Sulphur dioxide d) Nitrous oxide

114 Ammonia is generally manufactured for fertilizers by the reaction:

1.

- a) $2\text{NH}_4\text{Cl} + \text{Ca}(\text{OH})_2 \rightarrow \text{CaCl}_2 + 2\text{H}_2\text{O} + 2\text{NH}_3$
b) By passing an electric discharge in a mixture of N_2 and H_2
c) By reducing the byproduct nitric acid
d) By passing a mixture of N_2 and H_2 under high pressure and moderate temperature over a catalyst

114 Which halide of nitrogen is least basic?

2.

- a) NF_3 b) NCl_3 c) NI_3 d) NBr_3

114 Reagent used to distinguish H_2O_2 and O_3 is:

3.

- a) PbS b) Starch and iodine c) KMnO_4 d) Bleaching powder

114 Which one liberates Br_2 from KBr ?

4.

- a) I_2 b) HI c) Cl_2 d) SO_2

114 Which chloride is explosive?

5.

- a) PCl_3 b) AsCl_3 c) NCl_3 d) SbCl_3

114 Extra pure N_2 can be obtained by heating

6.

- a) NH_3 with CuO b) NH_4NO_3 c) $(\text{NH}_4)_2\text{Cr}_2\text{O}_7$ d) $\text{Ba}(\text{N}_3)_2$

114 Tincture of iodine is:

7.

- a) I_2 , KI and rectified spirit
b) I_2 and rectified spirit
c) KI and rectified spirit

- d) I₂ and water
- 114 What are the products formed in the reaction of xenon hexafluoride with silicon dioxide?
8.
- a) XeSiO₄ + HF b) XeF₂ + SiF₄ c) XeOF₄ + SiF₄ d) XeO₃ + SiF₂
- 114 Mixture of sand and iodine can be separated by:
9.
- a) Dissolving in water and filtering
b) Fractional crystallization
c) Sublimation
d) Separation is not possible
- 115 Cl₂ gas is evolved as byproduct in the manufacture of all the following elements except:
0.
- a) Mg b) Na c) Al d) K
- 115 Which is more suitable for storing concentrated H₂SO₄?
1.
- a) Copper vessel b) Aluminium vessel c) Earthen vessel d) Glass vessel
- 115 Sodium nitrate on heating with zinc dust and caustic soda gives:
2.
- a) NaNO₂ b) NH₃ c) NO₂ d) N₂O
- 115 Which of the following forms vortex ring?
3.
- a) P₂O₅ b) PH₃ c) NH₃ d) P₄O₁₀
- 115 When radioactive minerals like cleveite, monazite and pitchblende are heated to 1273 k in vacuo the noble
4. gas obtained is
- a) Rn b) Kr c) He d) Ne
- 115 Diamagnetic oxide of chlorine is:
5.
- a) ClO₃ b) Cl₂O₆ c) ClO₂ d) None of these
- 115 Best absorbent for SO₂ is:
6.
- a) H₂SO₄ b) KOH(aq.) c) Water d) CaCl₂ anhyd.
- 115 In which reaction does SO₂ act as oxidizing agent?
7.
- a) Acidified KMnO₄ b) Acidified K₂Cr₂O₇ c) Acidified C₂H₅OH d) H₂S
- 115 In one of the following reactions HNO₃ does not behave as an oxidizing agent Identify it
8.
- a) I₂ + 10HNO₃ → 2HIO₃ + 10NO₂ + 4H₂O
b) 3Cu + 8HNO₃ → 3Cu(NO₃)₂ + 2NO + 4H₂O
c) 4Zn + 10HNO₃ → 4Zn(NO₃)₂ + NH₄NO₃ + 3H₂O
d) 2HNO₃ + P₂O₅ → 2HPO₃ + N₂O₅
- 115 Bleaching powder is an example of:
9.
- a) An acidic salt b) A complex salt c) A double salt d) A mixed salt
- 116 Iron sulphide is heated in air to form A. an oxide of sulphur. A is dissolved in water to give an acid. The
0. basicity of this acid is....
- a) 2 b) 3 c) 1 d) zero
- 116 When ammonia is dissolved in water:
1.
- a) It loses a proton
b) It loses an electron
c) It gains a proton from water molecule

- d) It gains an electron from water molecule
- 116 The S – S – S bond angle in S_8 molecule is
2.
a) 109.5° b) 105° c) 110° d) 60°
- 116 Which of the following is planar?
3.
a) XeF_2 b) XeO_2F_2 c) XeO_3F d) XeF_4
- 116 Which oxide of N is neutral?
4.
a) N_2O_3 b) N_2O_5 c) N_2O_4 d) N_2O
- 116 I_2 can exist in the oxidation states:
5.
a) -1, +1, +3, +5 b) -1, +1, +3 c) +3, +5, +7 d) -1, +1, +3, +5, +7
- 116 Ozone is manufactured by carrying silent electric discharge using:
6.
a) Siemens ozonizer
b) Brodie's ozonizer
c) Siemens and Halske's ozonizer
d) All of the above
- 116 Which forms new compound in air?
7.
a) H_2O in air b) O_2 in air c) N_2 in air d) Phosphorus in air
- 116 Which statement regarding He is incorrect?
8.
a) It is used in gas cooled nuclear reactor
b) It is used as a cryogenic agent for carrying out experiment at low temperature
c) It is used to produce and sustain powerful superconducting magnets
d) It is used to fill gas balloons instead of H_2 because it is lighter and non-combustible
- 116 Reactivity of NO is due to:
9.
a) Its low molecular weight
b) Its gaseous state
c) Odd electron
d) None of the above
- 117 Welding of magnesium can be done in an atmosphere of:
0.
a) O_2 b) He c) N_2 d) All of these
- 117 Colloidal sulphur is obtained by the action of HNO_3 on:
1.
a) H_2S b) HgS c) CaS_2 d) CaS_2O_3
- 117 Treatment of CS_2 with excess of Cl_2 gives:
2.
a) CCl_4 b) $CHCl_3$ c) Carbon black d) C_2H_5Cl
- 117 The oxygen family is characterised by the electronic configuration:
3.
a) $ns^2 np^4$ b) $ns^2 np^2$ c) $ns^1 np^3$ d) $ns^2 np^5$
- 117 Which one of the following noble gases is used in miner's cap lamps?
4.
a) Helium b) Neon c) Argon d) Krypton
- 117 Colour of bromine in CS_2 is:

5. a) Green b) Orange c) Yellow d) Red
- 117 Bleaching powder on standing forms mixture of:
6. a) $\text{CaO} + \text{Cl}_2$ b) $\text{HOCl} + \text{Cl}_2$ c) $\text{CaCl}_2 + \text{Ca}(\text{ClO}_3)_2$ d) $\text{CaO} + \text{CaCl}_2$
- 117 Which statement is not correct?
7. a) Xe is the most reactive among the rare gases
b) He is an inert gas
c) Radon is obtained from decay of radium
d) The most abundant rare gas found in atmosphere is He
- 117 Which acid can combine with its own salt again?
8. a) HF b) HBr c) HCl d) HI
- 117 Among the following the number of compounds that can react with PCl_5 to give POCl_3 is O_2 , CO_2 , SO_2 , H_2O ,
9. H_2SO_4 , P_4O_{10}
a) 1 b) 2 c) 3 d) 4
- 118 When water is added in conc. H_2SO_4 the reaction is exothermic because:
0. a) H_2SO_4 is viscous
b) Hydrates of H_2SO_4 are formed
c) H_2SO_4 is corrosive
d) None of the above
- 118 Polyanion formation is maximum in
1. a) Nitrogen b) Sulphur c) Oxygen d) Boron
- 118 The solubility of noble gases in water shows the order:
2. a) $\text{He} > \text{Ar} > \text{Kr} > \text{Ne} > \text{Xe}$
b) $\text{He} > \text{Ne} > \text{Ar} > \text{Kr} > \text{Xe}$
c) $\text{Xe} > \text{Kr} > \text{Ar} > \text{Ne} > \text{He}$
d) None of the above
- 118 Solid Cl_2O_6 exists as:
3. a) $\text{ClO}_2^+ \cdot \text{ClO}_4^-$ b) Covalent species c) $(\text{ClO}_3)_2$ d) None of these
- 118 Which of the element listed below occurs in allotropic forms?
4. a) Sulphur b) Copper c) Iodine d) Silver
- 118 Concentrated HNO_3 reacts with I_2 to gives
5. a) HI b) HOI c) HIO_3 d) HOIO_2
- 118 Noble gases are adsorbed by:
6. a) Finely divided Pd and Pt
b) Colloidal Pd
c) Coconut charcoal
d) All of the above
- 118 In which of the following, NH_3 is not used?
7. a) Tollen's reagent
b) Nessler's reagent

- c) Group reagent for the analysis of IV group basic radicals
d) Group reagent for the analysis of III group basic radicals
- 118 The element than oxidizes water to oxygen with evolution of heat is:
8.
a) Fluorine b) Chlorine c) Iodine d) Bromine
- 118 Which of the following compounds is not an “interseudohalogen”?
9.
a) Cl_2N_3 b) BrCN c) ClCN d) ICN
- 119 Which is called stranger gas?
0.
a) Kr b) Xe c) He d) Ne
- 119 The ratio of the gases obtained on dehydration of HCOOH and $\text{H}_2\text{C}_2\text{O}_4$ by conc. H_2SO_4 is:
1.
a) 1 : 2 b) 2 : 1 c) 1 : 3 d) 3 : 1
- 119 Peroxy compound is:
2.
a) $\text{H}_2\text{S}_2\text{O}_8$ b) $\text{H}_2\text{S}_4\text{O}_8$ c) $\text{H}_2\text{S}_2\text{O}_6$ d) $\text{H}_2\text{S}_2\text{O}_3$
- 119 During bleaching of chlorine an antichlor is used to:
3.
a) Enhance bleaching action
b) Eliminate last traces of bleaching agent
c) Remove greases from the fibre
d) Liberate oxygen
- 119 T-shaped interhalogen compound is
4.
a) ClF_3 b) ICl c) ClF_5 d) IF_5
- 119 The catalyst used in Deacon’s process for Cl_2 is:
5.
a) Al_2O_3 b) CuCl_2 c) AlCl_3 d) MnO_2
- 119 Nitre cake is:
6.
a) NaHSO_4 b) NaNO_3 c) NaNO_2 d) Na_2SO_4
- 119 Helium is used in balloons in place of hydrogen because it is
7.
a) Incobusible b) Lighter than hydrogen
c) Radioactive d) More abundant than hydrogen
- 119 The O—O bond length in ozone is:
8.
a) 1.27 Å b) 1.21 Å c) 1.34 Å d) 1.48 Å
- 119 The reaction in the Kipp’s apparatus stops on closing the outlet, because:
9.
a) The acid becomes weak
b) Gas starts coming out form top
c) A protective film is formed on iron sulphide
d) The contact between sulphide and the acid is broken by the presence of gas collected in the free surface of the middle chamber
- 120 Sulphur hepto oxide is an anhydride of
0.
a) $\text{H}_2\text{S}_2\text{O}_8$ b) $\text{H}_2\text{S}_2\text{O}_7$ c) H_2SO_4 d) H_2SO_5
- 120 Hydrolysis of PI_3 yields:
1.

- a) Monobasic acid and a salt
 b) Monobasic acid and dibasic acid
 c) Dibasic acid and tribasic acid
 d) Monobasic acid and tribasic acid
- 120 Which is not poisonous?
 2.
 a) NH_3 b) PH_3 c) AsH_3 d) SbH_3
- 120 What is the number of sigma (σ) and pi (π) bonds present in sulphuric acid molecule?
 3.
 a) $6\sigma, 2\pi$ b) $6\sigma, 0\pi$ c) $2\sigma, 4\pi$ d) $2\sigma, 2\pi$
- 120 In sulphate ion the oxidation state of sulphur is +6 and the hybridization state of sulphur is:
 4.
 a) sp^2 b) sp^3 c) d^2sp^3 d) sp^3d^2
- 120 The element evolving two different gases on reaction with conc. Sulphuric acid is
 5.
 a) P b) C c) Hg d) S
- 120 Which statement is correct?
 6.
 a) Ozone is a resonance hybrid of oxygen
 b) Ozone is an allotropic modification of oxygen
 c) Ozone is an isomer of oxygen
 d) Ozone has no relationship with oxygen
- 120 When sulphur is boiled with Na_2SO_3 solution, the compound formed is
 7.
 a) Sodium thiosulphate b) Sodium sulphate c) Sodium sulphide d) Sodium persulphate
- 120 Number of valence electrons used in the Lewis structure of SO_4^{2-} are:
 8.
 a) 22 b) 20 c) 18 d) None of these
- 120 The shape of IF_7 molecule is:
 9.
 a) Octahedral
 b) Pentagonal bipyramidal
 c) Tetrahedral
 d) Trigonal bipyramidal
- 121 The strongest acid amongst the following is
 10.
 a) HClO b) HClO_2 c) HClO_3 d) HClO_4
- 121 In ordinary Cl_2 gas Cl^{35} and Cl^{37} are in the ratio:
 1.
 a) 1 : 3 b) 3 : 1 c) 1 : 1 d) 1 : 2
- 121 Which group is called buffer group of the periodic table?
 2.
 a) I b) VII c) VIII d) Zero
- 121 Gradual addition of electronic shells in the noble gases causes a decrease in their
 3.
 a) Ionisation energy b) Density c) Boiling point d) Atomic radius
- 121 Colour of iodine solution is disappeared by shaking it with aqueous solution of
 4.
 a) Na_2S b) $\text{Na}_2\text{S}_2\text{O}_3$ c) Na_2S d) Na_2SO_4
- 121 S—S bond is not present in

5. a) $\text{H}_2\text{S}_2\text{O}_4$ b) $\text{H}_2\text{S}_2\text{O}_6$ c) $\text{H}_2\text{S}_2\text{O}_8$ d) None of these
- 121 Which one among the following non-metals is liquid at 25°C ?
6. a) Bromine b) Sulphur c) Phosphorus d) carbon
- 121 A radioactive element is:
7. a) Sulphur b) Polonium c) Tellurium d) Selenium
- 121 Metalloid among the following is:
8. a) O b) S c) Te d) Po
- 121 The basic character of hydrides of the V-group elements decreases in the order
9. a) $\text{NH}_3 > \text{SbH}_3 > \text{PH}_3 > \text{AsH}_3$ b) $\text{SbH}_3 > \text{AsH}_3 > \text{PH}_3 > \text{NH}_3$
c) $\text{NH}_3 > \text{PH}_3 > \text{AsH}_3 > \text{SbH}_3$ d) $\text{SbH}_3 > \text{PH}_3 > \text{AsH}_3 > \text{NH}_3$
- 122 At room temperature, H_2O is liquid while H_2S is a gas. The reason is
0. a) Electronegativity of O is greater than S
b) Difference in the bond angles of both the molecules
c) Association takes place in H_2O due to H-bonding while no H-bonding in H_2S
d) O and S belong to different periods
- 122 The correct order for decreasing acidic strength of oxoacids of gp.15 is:
1. a) $\text{HNO}_3 > \text{H}_3\text{SbO}_4 > \text{H}_3\text{AsO}_4 > \text{H}_3\text{PO}_4$
b) $\text{H}_3\text{PO}_4 > \text{H}_3\text{AsO}_4 > \text{H}_3\text{SbO}_4 > \text{HNO}_3$
c) $\text{HNO}_3 > \text{H}_3\text{PO}_4 > \text{H}_3\text{AsO}_4 > \text{H}_3\text{SbO}_4$
d) $\text{HNO}_3 > \text{H}_3\text{AsO}_4 > \text{H}_3\text{PO}_4 > \text{H}_3\text{SbO}_4$
- 122 Chlorine gas can be dried by passing over:
2. a) Quick lime
b) Soda lime
c) Caustic potash sticks
d) Concentrated sulphuric acid
- 122 Which of the following bonds will be most polar?
3. a) N—Cl b) O—F c) N—F d) N—N
- 122 The metal which forms amide on passing NH_3 on it at 300°C is:
4. a) Magnesium b) Lead c) Aluminium d) sodium
- 122 The first noble gas compound obtained was:
5. a) XeF_2 b) XeF_4 c) XePtF_6 d) XeOF_4
- 122 Sulphurous acid can be used as:
6. a) Oxidizing agent b) Reducing agent c) Bleaching agent d) All of these
- 122 The ease of liquefaction of noble gases decreases in the order:
7. a) $\text{He} > \text{Ne} > \text{Ar} > \text{Kr} > \text{Xe}$
b) $\text{Xe} > \text{Kr} > \text{Ar} > \text{Ne} > \text{He}$
c) $\text{Kr} > \text{Xe} > \text{He} > \text{Ar} > \text{Ne}$
d) $\text{Ar} > \text{Kr} > \text{Xe} > \text{He} > \text{Ne}$

122 The reason why conc H_2SO_4 is used largely to prepare other acids is that conc H_2SO_4

8.

- a) Is highly ionised
c) Has high specific gravity and density
- b) Is dehydrating agent
d) Has a high boiling point

122 A cold, green flame can be made by passing CO_2 over warm:

9.

- a) Bronze
b) White P
c) Grey Sn
d) Green candles

123 Which one of the following reacts with glass?

10.

- a) H_2SO_4
b) HF
c) HNO_3
d) $\text{K}_2\text{Cr}_2\text{O}_7$

123 Super halogen is:

1.

- a) F_2
b) Cl_2
c) Br_2
d) I_2

123 The gas which is supporter of combustion is:

2.

- a) NH_3
b) N_2O
c) NO_2
d) N_2O_5

123 The halide that cannot act as Lewis acid is:

3.

- a) SiCl_4
b) SnCl_4
c) CCl_4
d) SF_4

123 Which gives off oxygen on moderate heating?

4.

- a) Cupric oxide
b) Mercuric oxide
c) Zinc oxide
d) Aluminium oxide

123 Which is the true covalent oxide of iodine?

5.

- a) I_2O_4
b) I_2O_5
c) I_2O_8
d) I_4O_9

123 Which element out of He, Ar, Kr and Xe forms least number of compounds?

6.

- a) Kr
b) Xe
c) Ar
d) He

123 Which one is the anhydride of HClO_4 ?

7.

- a) ClO_2
b) Cl_2O_7
c) Cl_2O
d) Cl_2O_6

123 Dry bleaching is done by:

8.

- a) Cl_2
b) SO_2
c) O_3
d) H_2O_2

123 Which chemical contains chlorine?

9.

- a) Fischer salt
b) Epsom salt
c) Fermy's salt
d) Spirit of salt

124 Which reaction represents the oxidizing behaviour of H_2SO_4 ?

10.

- a) $2\text{PCl}_5 + \text{H}_2\text{SO}_4 \rightarrow 2\text{POCl}_3 + 2\text{HCl} + \text{SO}_2\text{Cl}_2$
b) $2\text{NaOH} + \text{H}_2\text{SO}_4 \rightarrow \text{Na}_2\text{SO}_4 + 2\text{H}_2\text{O}$
c) $\text{NaCl} + \text{H}_2\text{SO}_4 \rightarrow \text{NaHSO}_4 + \text{HCl}$
d) $2\text{HI} + \text{H}_2\text{SO}_4 \rightarrow \text{I}_2 + \text{SO}_2 + 2\text{H}_2\text{O}$

124 Which statement is wrong?

1.

- a) Oxygen and Sulphur belong to the same group of periodic table
b) Oxygen is a gas while Sulphur is solid
c) Both show +2, +4 and +6 oxidation states
d) H_2S shows no hydrogen bonding

124 Concentrated sulphuric acid can be reduced by

2.

- a) NaCl b) NaF c) NaOH d) NaBr
- 124 A solution of SO_2 in water reacts with H_2S precipitating sulphur. Here SO_2 acts as:
- 3.
- a) An oxidizing agent b) A reducing agent c) An acid d) A catalyst
- 124 Sulphuric acid has great affinity for water because
- 4.
- a) Acid decomposes water b) It hydrolyses the acid
c) It decomposes the acid d) Acid forms hydrates with water
- 124 Correct order of electron affinities of halogens is
- 5.
- a) $\text{F} > \text{Cl} > \text{Br} > \text{I}$ b) $\text{I} > \text{Br} > \text{Cl} > \text{F}$ c) $\text{Cl} > \text{F} > \text{I} > \text{Br}$ d) $\text{Cl} > \text{F} > \text{Br} > \text{I}$
- 124 The correct order of acidity of halogenic acids is
- 6.
- a) $\text{HF} < \text{HCl} < \text{HBr} < \text{HI}$ b) $\text{HI} < \text{HBr} < \text{HCl} < \text{HF}$
c) $\text{HI} < \text{HCl} < \text{HBr} < \text{HF}$ d) $\text{HF} < \text{HBr} < \text{HI} < \text{HCl}$
- 124 Pearl white is:
- 7.
- a) BiOCl b) SbOCl c) NOCl d) AsOCl
- 124 The nitrate which when heated gives-off a gas or a mixture of gases which cannot relight a glowing splinter is:
- 8.
- a) Sodium nitrate b) Ammonium nitrate c) Lead nitrate d) Potassium nitrate
- 124 H_2SO_4 acts as dehydrating agent in its reaction with:
- 9.
- a) $\text{Ba}(\text{OH})_2$ b) Zn c) KOH d) $\text{H}_2\text{C}_2\text{O}_4$
- 125 Nitric oxide is prepared by the action of cold dil. HNO_3 on :
- 10.
- a) Fe b) Cu c) Sn d) Zn
- 125 Which of the following halogen acids has the lowest melting point?
- 1.
- a) HF b) HCl c) HBr d) HI
- 125 The lone pair present on N family hydrides more easily participates in bond formation in:
- 2.
- a) AsH_3 b) PH_3 c) NH_3 d) SbH_3
- 125 Which does not react with KMnO_4 solution?
- 3.
- a) O_3 b) H_2O_2 c) H_2S d) H_2SO_3
- 125 Noble gases are prepared by the:
- 4.
- a) Condensation of gases of the air
b) Fractionation of liquid oxygen
c) Removal of nitrogen and oxygen from air
d) Fractionation of liquid air
- 125 When an aqueous solution of hypochlorite is heated:
- 5.
- a) Chlorine is evolved
b) Chlorite is formed
c) Chlorate is formed
d) Chlorine peroxide is formed
- 125 Sodium chromite is:
- 6.
- a) Na_2CrO_4 b) $\text{Na}_2\text{Cr}_2\text{O}_4$ c) $\text{Na}_2\text{Cr}_2\text{O}_7$ d) $\text{Cr}_2(\text{SO}_4)_3$

127 The group 15 or VA group elements are commonly known as:

0.
a) Halogens b) Normal elements c) Pnictogens d) None of these

127 In the reduction of HNO_3 to N_2O , the number of mole of electrons involved per mole of HNO_3 is:

1.
a) 8 b) 4 c) 3 d) 6

127 Sulphuric acid reacts with PCl_5 to yield:

2.
a) Thionyl chloride b) Sulphuryl chloride c) Phosphoric acid d) Sulphur monochloride

127 Which of the following compounds can not be stored in glass vessels?

3.
a) XeF_4 b) XeF_6 c) XeO_3 d) XeF_2

127 Which is tribasic acid?

4.
a) H_3PO_2 b) H_3PO_4 c) $\text{H}_4\text{P}_2\text{O}_7$ d) H_3PO_3

127 Which substance chars when warmed with conc. H_2SO_4 ?

5.
a) Protein b) Fat c) Hydrocarbon d) Carbohydrate

127 When fluoride is heated with conc. H_2SO_4 and MnO_2 the gas evolved is:

6.
a) HF b) F_2 c) SF d) None of these

127 The compound of sulphur used as a solvent in rubber industry is

7.
a) $\text{SO}_2(\text{OH})\text{Cl}$ b) SO_2 c) SO_3 d) S_2Cl_2

127 Which one can be used to test for H_2S gas?

8.
a) A smell of rotten egg
b) A violet colouration with sodium nitroprusside
c) Turning lead acetate paper black
d) All of the above

127 When H_2S is passed through nitric acid solution, the product formed is:

9.
a) Milk of Sulphur b) colloidal Sulphur c) γ - sulphur d) β - sulphur

128 Sulphurous anhydride is:

0.
a) SO_2 b) SO_3 c) HSO_3^- d) SO_3^{2-}

128 The percentage of ozone in ozonized oxygen is about:

1.
a) 10% b) 40% c) 80% d) 100%

128 The weakest acid among the following is:

2.
a) HClO b) HBr c) HClO_3 d) HCl

128 White phosphorus may be separated from red phosphorus by:

3.
a) Sublimation b) Distillation c) Dissolving in CS_2 d) None of these

128 The correct order of bond angles in H_2S , NH_3 , BF_3 and SiH_4 is:

4.
a) $\text{H}_2\text{S} < \text{NH}_3 < \text{BF}_3 < \text{SiH}_4$
b) $\text{NH}_3 < \text{H}_2\text{S} < \text{SiH}_4 < \text{BF}_3$
c) $\text{H}_2\text{S} < \text{NH}_3 < \text{SiH}_4 < \text{BF}_3$

- d) $\text{H}_2\text{S} < \text{SiH}_4 < \text{NH}_3 < \text{BF}_3$
- 128 Solid PCl_5 exists as:
- 5.
- a) PCl_5 b) PCl_4^+ c) PCl_6^- d) PCl_4^+ and PCl_6^-
- 128 Among the fluorides given below which will further react with F_2 ?
- 6.
- a) NaF b) CaF_2 c) SF_6 d) IF_5
- 128 Ammonia is soluble in water because it is:
- 7.
- a) A polar molecule b) Bronsted base c) Both (a) and (b) d) None of these
- 128 Formula of iodine phosphate is:
- 8.
- a) I_3PO_4 b) $\text{I}_2(\text{PO}_4)_3$ c) IPO_4 d) I_2PO_4
- 128 The tetrahedral nature of the three bonds in a chlorate ion (ClO_3^-) is due to:
- 9.
- a) The presence of a lone pair of electrons
 b) sp^3 -hybridization
 c) sp^2 -hybridization
 d) Trigonal bipyramidal shape of ion
- 129 Which acid on keeping for long time acquires brown colour?
- 0.
- a) HF b) HCl c) HBr d) HI
- 129 Potassium chlorate on heating with conc. H_2SO_4 gives:
- 1.
- a) Chlorine dioxide b) HClO_4 c) KHSO_4 d) All of these
- 129 In the reaction, $\text{HNO}_3 + \text{P}_4\text{O}_{10} \rightarrow 4\text{HPO}_3 + x$, the product x is
- 2.
- a) NO_2 b) N_2O_5 c) N_2O_3 d) H_2O
- 129 Which has the strongest bond?
- 3.
- a) $\text{F} - \text{Br}$ b) $\text{F} - \text{Cl}$ c) $\text{F} - \text{F}$ d) $\text{Cl} - \text{Br}$
- 129 The forces of cohesion in liquid helium are:
- 4.
- a) Covalent b) Ionic c) Van der Waals' d) Metallic
- 129 When molten sulphur is suddenly cooled by pouring into water, it takes the form of
- 5.
- a) Milk of sulphur b) Colloidal sulphur c) Flower of sulphur d) Plastic sulphur
- 129 Which does not react with H_2SO_4 to form H_2 ?
- 6.
- a) Al b) Pb c) Zn d) Mg
- 129 A certain compound when burnt gave three oxides. The first turned lime water milky, the second turned cobalt chloride paper pink and the third formed an aqueous solution of pH 3 nearly. The elements present in the compound are:
- 7.
- a) $\text{C}, \text{S}, \text{O}$ b) $\text{C}, \text{H}, \text{Na}$ c) $\text{C}, \text{H}, \text{S}$ d) $\text{C}, \text{H}, \text{Ca}$
- 129 The starting material in Birkeland and Eyde's process for the manufacture of HNO_3 is:
- 8.
- a) NH_3 b) NO_2 c) Air d) Chile saltpetre
- 129 Anhydride of sulphuric acid is:
- 9.
- a) SO_2 b) SO_3 c) $\text{H}_2\text{S}_2\text{O}_3$ d) H_2SO_3

130 The essential element of nitrogen fixation is:

0.
a) Zn b) Cu c) Mo d) B

130 Which one of the following configuration represents a noble gas?

1.
a) $1s^2, 2s^2 2p^6, 3s^2$ b) $1s^2, 2s^2 2p^6, 3s^1$
c) $1s^2, 2s^2 2p^6$ d) $1s^2, 2s^2 2p^6, 3s^2 3p^6, 4s^2$

130 Which halogen do not form polyhalide ion?

2.
a) F b) Cl c) Br d) I

130 Oxygen is manufactured by fractional distillation of:

3.
a) H_2O b) H_2O_2 c) Na_2O_2 d) Liquid air

130 Which is not the property of nitrogen?

4.
a) Hydrogen bonding b) Catenation c) Supporter of life d) Low b.p.

130 Which metal loses its meniscus after reaction with ozone?

5.
a) Ag b) Hg c) Pb d) Cu

130 The two electrons in helium atom:

6.
a) Occupy different shells
b) Have different spins
c) Have the same spins
d) Occupy different subshells of the same subshell

130 Which of the following is not tetrahedral?

7.
a) SCl_4 b) SO_4^{2-} c) $Ni(CO)_4$ d) $NiCl_4^{2-}$

130 The hydrolysis of PCl_3 produces:

8.
a) $H_3PO_3 + HClO$ b) $H_3PO_3 + HCl$ c) $H_3PO_4 + HCl$ d) $PH_3 + HClO$

130 NaOH can absorb :

9.
a) N_2O_5 b) NO c) N_2O d) All of these

131 The electron affinity of halogens shows the order:

0.
a) $I > Cl > F > Br$ b) $Cl > F > Br > I$ c) $F > Cl > I > Br$ d) $F > I > Cl > Br$

131 On heating ozone its volumes:

1.
a) Decreases to half
b) Becomes double
c) Increases to 3/2 times
d) Remains unchanged

131 Which non-metal does not combine directly with Cl_2 , Br_2 and I_2 ?

2.
a) Carbon b) Nitrogen c) Oxygen d) All of these

131 Oleum or fuming H_2SO_4 is:

3.
a) A mixture of conc. H_2SO_4 and oil
b) Sulphuric acid which gives fumes of sulphur dioxide

7. a) Isobars b) Isomers c) Isotopes d) Allotropes
- 132 Copper turning on heating with conc. H_2SO_4 produce
8. a) H_2S b) O_2 c) SO_3 d) SO_2
- 132 Which one of the following represents noble gas configuration?
9. a) $1s^2, 2s^2 2p^6, 3s^2 3p^6 3d^{10}, 4s^2 4p^6 4d^{10}, 5s^2, 5p^6 5d^6, 6s^2$
 b) $1s^2, 2s^2 2p^6, 3s^2 3p^6 3d^{10}, 4s^2 4p^6 4d^{10}, 5s^2 5p^6 5d^1, 6s^2$
 c) $1s^2, 2s^2 2p^6, 3s^2 3p^6 3d^{10}, 4s^2 4p^6 4d^{10}, 5s^2 5p^6$
 d) $1s^2, 2s^2 2p^6, 3s^2 3p^6 3d^{10}, 4s^2 4p^6 4f^{14}, 5s^2 5p^6 5d^1$
- 133 Which of the following is more acidic in nature?
0. a) HClO b) HClO_2 c) HClO_3 d) HClO_4
- 133 The lattice energy of lithium halides in the following order
1. a) $\text{LiF} > \text{LiCl} > \text{LiBr} > \text{LiI}$ b) $\text{LiI} > \text{LiBr} > \text{LiCl} > \text{LiF}$
 c) $\text{LiCl} > \text{LiF} > \text{LiBr} > \text{LiI}$ d) $\text{LiBr} > \text{LiCl} > \text{LiF} > \text{LiI}$
- 133 Iodine readily dissolves in potassium iodide solution giving
2. a) I^- b) KI^- c) KI_2^- d) KI_3
- 133 Which one of the following is not true at room temperature and pressure?
3. a) P_4O_{10} is a white solid b) SO_2 is a colourless gas
 c) SO_3 is a colourless gas d) NO_2 is brown gas
- 133 Amongst H_2O , H_2S , H_2Se and H_2Te one having higher b.pt. is
4. a) H_2S because of hydrogen bonding b) H_2Se because of lower molecular weight
 c) H_2Te because of higher molecular weight d) H_2O because of hydrogen bonding
- 133 Which of the following acid posses oxidising, reducing and complex forming properties?
5. a) HCl b) H_2SO_4 c) HNO_2 d) HNO_3
- 133 The number of π -bonds present in NCl_3 is:
6. a) 1 b) 2 c) 3 d) None of these
- 133 Ammonium chloride is removed from its mixture by:
7. a) Filtration b) Distillation c) Sublimation d) A magnet
- 133 White smoke is formed when ammonia gas meets with:
8. a) Water b) HCl c) H_2SO_4 d) HNO_3
- 133 Pure Cl_2 is prepared on heating:
9. a) NaCl b) PtCl_4 c) CuCl_2 d) All of these
- 134 Liquid ammonia is used in refrigeration because of its
0. a) High dipole moment b) High heat of vaporisation

- c) High basicity
134 The acid used in soft drinks is:
1. a) H_3PO_4 b) H_3PO_3 c) HPO_3 d) H_3PO_2
- 134 Which of the elements of group VA does not show allotropy?
2. a) N b) Bi c) P d) As
- 134 In the electrothermal process, the compound displaced by silica from calcium phosphate is
3. a) Calcium phosphide b) Phosphine
c) Phosphorus d) Phosphorus pentoxide
- 134 It is possible to obtain oxygen from air by fractional distillation because:
4. a) Oxygen is in different group of periodic table from nitrogen
b) Oxygen is more active than nitrogen
c) Oxygen has higher boiling point than nitrogen
d) Oxygen has lower density than nitrogen
- 134 NH_3 is an example of:
5. a) Molecular hydride b) Polymeric hydride c) Metallic hydride d) Interstitial hydride
- 134 When SO_2 reacts with nitrous acid, the compound formed is:
6. a) H_2S b) S c) SO_3 d) H_2SO_4
- 134 Among the halogens, the one which is oxidized by nitric acid is
7. a) Iodine b) Bromine c) Fluorine d) Chlorine
- 134 Which is most basic of the following oxides?
8. a) Na_2O b) BaO c) As_2O_3 d) Al_2O_3
- 134 Which is stronger acid?
9. a) H_2SeO_4 b) H_2SO_4 c) H_2TeO_4 d) H_2O
- 135 Ammonia on reaction with hypochlorite anion, can form
0. a) NO b) N_2H_4 c) NH_4Cl d) HNO_2
- 135 Which of the following compounds do not exist?
1. a) $\text{N}_4, \text{NCl}_5, \text{PO}_2$ b) $\text{N}_2, \text{NCl}_3, \text{NO}_2$ c) $\text{PCl}_5, \text{P}_2\text{O}_5, \text{NCl}_3$ d) $\text{PO}_2, \text{P}_4, \text{NCl}_3$
- 135 Oxidation of ammonia by CuO yields:
2. a) N_2 b) N_2O_5 c) NO d) NO_2
- 135 For chrome plating the electrolytic bath contains:
3. a) HClO_4 and conc. H_2SO_4 b) Chromic acid and conc. c) $\text{K}_2\text{Cr}_2\text{O}_7$ d) Chromic sulphate
- 135 At T (K), 100 L of dry oxygen is present in a sealed container. It is subjected to silent electric discharge,
4. till the volumes of oxygen and ozone becomes equal .what is the volume of ozone formed at T (K)?
- a) 50 b) 60 c) 30 d) 40
- 135 What is the correct order of occurrence (% by weight) in air of Ne, Ar and Kr?
5. a) $\text{Ne} > \text{Ar} > \text{Kr}$ b) $\text{Ar} > \text{Ne} > \text{Kr}$ c) $\text{Ar} > \text{Kr} > \text{Ne}$ d) $\text{Ne} > \text{Kr} > \text{Ar}$
- 135 The source of most of the noble gases is:

6. a) Decay of radioactive minerals
b) The atmospheric air
c) The natural gases coming out of the earth
d) The decay of rocks
- 135 Incorrect statement for pyrophosphorus acid $H_4P_2O_5$ is
7. a) It contains p in +5 oxidation state
b) It is dibasic acid
c) It is strongly reducing in nature
d) It contains one P—O—P bond
- 135 $SO_2 + H_2S \rightarrow$ product. The final product is
8. a) $H_2O + S$ b) H_2SO_4 c) H_2SO_3 d) $H_2S_2O_3$
- 135 Pure HBr gas may be obtained by heating sodium bromide with syrupy phosphoric acid and not with concentrated sulphuric acid because concentrated sulphuric acid is:
9. a) More volatile b) Less stable c) A weaker acid d) An oxidizing agent
- 136 Fertilizer having the highest nitrogen percentage is:
10. a) Calcium cyanamide b) Urea c) Ammonium nitrate d) Ammonium sulphate
- 136 Which gas is evolved by the treatment of magnesium with very dilute solution of HNO_3 ?
1. a) N_2 b) NO_2 c) H_2 d) H_2O
- 136 In colour discharge tubes, which is used?
2. a) Ne b) Ar c) Kr d) He
- 136 Which of the following hydrogen halides has the highest boiling point?
3. a) HI b) HBr c) HCl d) HF
- 136 Which of the following statement is not true?
4. a) HF is stronger than HCl
b) Among halide ions, iodide is the most powerful reducing agent
c) Radon is obtained from decay of Radium
d) Xe is most reactive gas among the rare gas
- 136 In which of the following chlorine is not used:
5. a) As germicide b) As oxidant c) As cutting tool d) As disinfectant
- 136 Solubility of iodine in water may be increased by adding
6. a) Chloroform b) Potassium iodide
c) Carbon disulphide d) Sodium thiosulphate
- 136 Platinum, palladium and iridium are called noble metals because
7. a) Alfred nobel discovered them
b) They are found in native state
c) They are shining lustrous and pleasing to look at
d) They are inert towards many common reagents
- 136 Bleaching powder is disinfectant for purification of water. When water born germs are killed. But disinfectant activity is destroyed. It is due to disproportion into
8. a) $CaCl_2$ and Cl_2 b) $CaCl_2$ and $Ca(ClO_3)_2$ c) CaO and Cl_2 d) CaO , Cl_2 and $CaCl_2$
- 136 Marshall's acid is:
- 9.

- a) $\text{H}_2\text{S}_2\text{O}_5$ b) $\text{H}_2\text{S}_2\text{O}_8$ c) H_2SO_3 d) H_2SO_5
- 137 The word neon signifies:
0.
- a) New b) Old c) Strange d) None of these
- 137 Paramagnetic oxide is:
1.
- a) NO b) N_2O_4 c) P_4O_6 d) N_2O_5
- 137 Fluorosis disease is caused due to the reaction of with excess of fluorine in the body.
2.
- a) Ca b) Mg c) Fe d) K
- 137 Among the halogens, the one which is oxidised by nitric acid is
3.
- a) Fluorine b) Iodine c) Chlorine d) Bromine
- 137 Which has the lowest boiling point?
4.
- a) NH_3 b) PH_3 c) SbH_3 d) BiH_3
- 137 The elements S, Se, Te can have two positive oxidation states. Which one of the following is correct?
5.
- a) +4 and +6 b) +2 and +4 c) +4 and +8 d) +2 and +6
- 137 The basicity of orthophosphoric acid is
6.
- a) 2 b) 4 c) 3 d) 5
- 137 Which sulphide is used in the manufacture of "strike anywhere" matches?
7.
- a) P_2S_5 b) P_2S_3 c) Sb_2S_3 d) None of these
- 137 Euchlorine is a mixture of
8.
- a) $\text{Cl}_2 + \text{ClO}_2$ b) $\text{Cl}_2 + \text{Cl}_2\text{O}$ c) $\text{Cl}_2\text{O}_3 + \text{ClO}_2$ d) $\text{Cl}_2\text{O} + \text{Cl}_2\text{O}_3$
- 137 Liquid oxygen:
9.
- a) Is an important constituent of rocket fuels
b) Is used for artificial respiration with CO_2
c) Mixed with finely divided carbon is explosive
d) All of the above
- 138 Acetic acid is added while preparing a standard solution of $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ to prevent:
0.
- a) Hydration b) Reduction c) Hydrolysis d) Complex formation
- 138 XeF_2 molecule is
1.
- a) Square planar b) Trigonal bipyramidal
c) Trigonal planar d) Linear
- 138 Iodine is placed between two liquids C_6H_6 and water:
2.
- a) It dissolves more in C_6H_6
b) It dissolves more in water
c) It dissolves equally in both
d) Does not dissolve in both
- 138 Which of the following oxide of nitrogen is the anhydride of HNO_3 ?
3.
- a) NO b) N_2O_3 c) N_2O_5 d) N_3O_4
- 138 The most stable allotropic form of sulphur is:

4. a) Rhombic sulphur b) Monoclinic sulphur c) Plastic sulphur d) Flowers of sulphur
138 Permonosulphuric acid is known as
5. a) Marshall's acid b) Caro's acid c) Sulphuric acid d) None of these
138 The reaction between copper and hot conc. H_2SO_4 gives:
6. a) SO_3 b) SO_2 c) $Cu(OH)_2$ d) H_2
138 Chlorine bleaches only in the:
7. a) Absence of acid b) Presence of alkali c) Absence of moisture d) Presence of moisture
138 HNO_3 oxidises:
8. a) H_2O_2 b) H_2S c) SO_2 d) All of these
138 The P – P – P bond angle in white phosphorus is
9. a) 60° b) 90° c) 120° d) $109^\circ 28'$
139 In the isolation of fluorine, a number of difficulties were encountered. Which statement is correct?
0. a) The potential required for the discharge of the fluoride ions is the lowest
b) Fluorine reacts with most glass vessels
c) Electrolysis of aqueous HF gives ozonized oxygen
d) All of the above

139 Match List I with List II and select the answer using the codes given below:

Code	List	Code	List II
A	XeF_4	1	Distorted octahedral
B	XeF_6	2	Tetrahedral
C	XeO_3	3	Square planar
D	XeO_4	4	Trigonal pyramidal

1. a) A-4, B-1, C-3, D-2 b) A-2, B-3, C-1, D-4 c) A-1, B-4, C-2, D-3 d) A-3, B-1, C-4, D-2
139 Which of the following elements is radioactive?
2. a) Oxygen b) Selenium c) Polonium d) Tellurium
139 When SO_2 is passed through acidified solution of H_2S :
3. a) H_2SO_3 is formed b) H_2SO_4 is formed c) Sulphur sol is formed d) H_2SO_5 is formed
139 Which one of the following reactions of Xenon compounds is not feasible?
4. a) $3XeF_4 + 6H_2O \rightarrow 2Xe + XeO_3 + 12HF + 1.5 O_2$
b) $2XeF_2 + 2H_2O \rightarrow 2Xe + 4HF + O_2$
c) $XeF_6 + RbF \rightarrow Rb[XeF_7]$
d) $XeO_3 + 6HF \rightarrow XeF_6 + 3H_2O$
139 Which blue liquid is obtained on reacting equimolar amounts of two gases at $-30^\circ C$?
5. a) N_2O b) N_2O_3 c) N_2O_4 d) N_2O_5
139 Which one is most electronegative?
6. a) O b) F c) H d) Cl

139 NH₃ gas is dried over:

7.

- a) Anhydrous CaCl₂ b) P₂O₅ c) Quick lime d) Conc. H₂SO₄

139 The largest bond angle exists in:

8.

- a) H₂Se b) NH₃ c) H₂O d) H₂S

139 Increasing order of strength of oxo-acids of chlorine is:

9.

- a) HClO < HClO₂ < HClO₃ < HClO₄
b) HClO₄ < HClO₂ < HClO < HClO₃
c) HClO < HClO₂ < HClO₃ < HClO₄
d) None of the above

140 The correct order of bond angles and stability of hydrides given below is:

0.

- a) NH₃ > PH₃ > AsH₃ > SbH₃
b) NH₃ > AsH₃ > PH₃ > SbH₃
c) SbH₃ > AsH₃ > PH₃ > NH₃
d) PH₃ > NH₃ > AsH₃ > SbH₃

140 The reaction of P₄ with aqueous NaOH gives

1.

- a) P(OH)₃ b) P₂O₅ c) P(OH)₅ d) PH₃

140 [X] + H₂SO₄ → [Y] a colourless gas with irritating smell. [Y] + K₂Cr₂O₇ + H₂SO₄ → Green solution [X] and

2. [Y] are:

- a) SO₃²⁻, SO₂ b) Cl⁻, HCl c) S²⁻, H₂S d) CO₃²⁻, CO₂

140 The smell of nitrogen dioxide is:

3.

- a) Pleasant b) Pungent c) Not known d) All are wrong

140 The gas obtained when urea reacts with nitrous acid is:

4.

- a) N₂ b) NO c) N₂O d) NO₂

140 The species that does not contain peroxide ion is

5.

- a) PbO₂ b) H₂O₂ c) SeO₂ d) BaO₂

140 Phosphine is prepared by the reaction of

6.

- a) P and HNO₃ b) P and H₂SO₄ c) P and NaOH d) P and H₂S

140 Which of the following does not react with AgCl?

7.

- a) Na₂S₂O₃ b) NH₄OH c) NaNO₃ d) Na₂CO₃

140 The oxidizing property of nitric acid is due to:

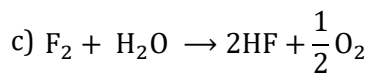
8.

- a) Its concentration
b) The positive valency of N
c) Its dilution
d) The unstability of its molecule and the presence of nitrogen in its highest state of oxidation

140 The reaction showing endothermic nature and reduction of halogen is:

9.

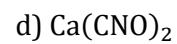
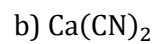
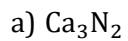
- a) $F_2 + \frac{1}{2} O_2 \rightarrow F_2O$
b) $Cl_2 + O_2 \rightarrow Cl_2O$



d) None of the above

141 Calcium carbide when heated with nitrogen forms:

0.



SMART ACHIEVERS LEARNING PVT. LTD.

ACTIVE SITE TUTORIALS

Date : 23-07-2019

Time : 23:30:00

Marks : 5640

TEST ID: 174

CHEMISTRY

7.THE P-BLOCK ELEMENTS

: ANSWER KEY :

1)	c	2)	b	3)	a	4)	b	165)	d	166)	a	167)	a	168)	b
5)	d	6)	c	7)	a	8)	b	169)	c	170)	a	171)	a	172)	d
9)	c	10)	a	11)	d	12)	d	173)	c	174)	a	175)	b	176)	d
13)	a	14)	c	15)	b	16)	d	177)	a	178)	b	179)	d	180)	c
17)	a	18)	c	19)	a	20)	a	181)	b	182)	b	183)	a	184)	d
21)	b	22)	d	23)	a	24)	d	185)	a	186)	c	187)	b	188)	d
25)	d	26)	d	27)	b	28)	c	189)	a	190)	d	191)	c	192)	a
29)	c	30)	b	31)	a	32)	b	193)	d	194)	a	195)	b	196)	b
33)	c	34)	c	35)	c	36)	b	197)	d	198)	b	199)	c	200)	b
37)	b	38)	a	39)	a	40)	a	201)	c	202)	d	203)	c	204)	d
41)	a	42)	c	43)	a	44)	b	205)	c	206)	b	207)	a	208)	b
45)	a	46)	a	47)	a	48)	b	209)	a	210)	c	211)	a	212)	a
49)	c	50)	a	51)	d	52)	a	213)	c	214)	d	215)	a	216)	a
53)	d	54)	d	55)	a	56)	c	217)	a	218)	b	219)	d	220)	b
57)	a	58)	c	59)	b	60)	a	221)	b	222)	b	223)	d	224)	a
61)	c	62)	c	63)	b	64)	b	225)	a	226)	b	227)	d	228)	c
65)	a	66)	c	67)	c	68)	d	229)	d	230)	b	231)	d	232)	a
69)	a	70)	d	71)	c	72)	b	233)	b	234)	b	235)	c	236)	c
73)	a	74)	d	75)	a	76)	c	237)	b	238)	c	239)	c	240)	b
77)	a	78)	c	79)	d	80)	a	241)	d	242)	d	243)	d	244)	d
81)	b	82)	a	83)	a	84)	d	245)	b	246)	c	247)	d	248)	a
85)	a	86)	d	87)	d	88)	b	249)	a	250)	a	251)	b	252)	b
89)	c	90)	a	91)	d	92)	a	253)	a	254)	b	255)	a	256)	a
93)	d	94)	a	95)	c	96)	a	257)	d	258)	d	259)	d	260)	b
97)	a	98)	c	99)	d	100)	b	261)	a	262)	a	263)	a	264)	d
101)	c	102)	c	103)	c	104)	b	265)	a	266)	c	267)	c	268)	c
105)	d	106)	a	107)	a	108)	b	269)	a	270)	b	271)	d	272)	d
109)	d	110)	a	111)	d	112)	d	273)	c	274)	b	275)	b	276)	a
113)	a	114)	c	115)	c	116)	a	277)	b	278)	b	279)	d	280)	d
117)	c	118)	c	119)	a	120)	a	281)	a	282)	a	283)	a	284)	d
121)	b	122)	a	123)	a	124)	c	285)	b	286)	d	287)	b	288)	c
125)	a	126)	b	127)	b	128)	a	289)	d	290)	a	291)	c	292)	d
129)	c	130)	a	131)	c	132)	c	293)	d	294)	d	295)	a	296)	d
133)	a	134)	a	135)	c	136)	d	297)	c	298)	c	299)	b	300)	a
137)	d	138)	a	139)	c	140)	b	301)	b	302)	d	303)	a	304)	d
141)	c	142)	a	143)	a	144)	a	305)	a	306)	b	307)	b	308)	d
145)	b	146)	d	147)	b	148)	c	309)	a	310)	d	311)	d	312)	c
149)	b	150)	c	151)	c	152)	c	313)	c	314)	b	315)	b	316)	d
153)	c	154)	a	155)	a	156)	a	317)	a	318)	a	319)	c	320)	b
157)	c	158)	b	159)	a	160)	c	321)	c	322)	c	323)	a	324)	d
161)	d	162)	b	163)	a	164)	d	325)	d	326)	b	327)	a	328)	a

329) a	330) a	331) d	332) b	533) a	534) c	535) c	536) c
333) d	334) c	335) c	336) c	537) d	538) b	539) a	540) a
337) b	338) b	339) c	340) d	541) b	542) b	543) c	544) c
341) a	342) b	343) c	344) a	545) b	546) a	547) a	548) b
345) c	346) d	347) b	348) a	549) b	550) c	551) c	552) c
349) a	350) d	351) c	352) c	553) d	554) b	555) d	556) d
353) a	354) a	355) b	356) a	557) d	558) d	559) b	560) a
357) b	358) d	359) c	360) a	561) c	562) c	563) a	564) b
361) d	362) c	363) b	364) b	565) a	566) a	567) b	568) a
365) a	366) d	367) c	368) d	569) c	570) a	571) d	572) a
369) c	370) d	371) a	372) d	573) a	574) c	575) c	576) d
373) b	374) d	375) b	376) d	577) c	578) b	579) b	580) b
377) b	378) a	379) a	380) c	581) b	582) d	583) d	584) b
381) c	382) b	383) a	384) a	585) d	586) d	587) a	588) a
385) d	386) a	387) d	388) d	589) b	590) b	591) d	592) d
389) a	390) a	391) d	392) a	593) d	594) a	595) d	596) a
393) a	394) a	395) a	396) d	597) a	598) b	599) a	600) a
397) b	398) b	399) b	400) a	601) d	602) c	603) c	604) a
401) b	402) b	403) c	404) d	605) b	606) b	607) b	608) c
405) a	406) d	407) b	408) c	609) b	610) d	611) d	612) b
409) d	410) a	411) c	412) b	613) d	614) d	615) c	616) c
413) a	414) b	415) b	416) b	617) d	618) b	619) a	620) b
417) d	418) b	419) b	420) a	621) b	622) c	623) d	624) a
421) b	422) c	423) d	424) b	625) c	626) d	627) c	628) d
425) c	426) c	427) c	428) c	629) a	630) d	631) d	632) c
429) c	430) d	431) a	432) b	633) c	634) b	635) b	636) d
433) d	434) c	435) a	436) d	637) a	638) b	639) a	640) a
437) c	438) d	439) d	440) a	641) b	642) a	643) b	644) a
441) a	442) d	443) b	444) d	645) b	646) c	647) b	648) c
445) a	446) d	447) a	448) d	649) c	650) d	651) c	652) b
449) b	450) c	451) c	452) c	653) b	654) c	655) d	656) c
453) d	454) d	455) b	456) b	657) d	658) c	659) b	660) b
457) c	458) b	459) a	460) b	661) d	662) a	663) c	664) c
461) d	462) a	463) a	464) c	665) a	666) a	667) c	668) d
465) d	466) a	467) a	468) c	669) b	670) b	671) c	672) b
469) a	470) a	471) a	472) b	673) b	674) d	675) b	676) a
473) d	474) c	475) d	476) d	677) b	678) d	679) b	680) b
477) d	478) a	479) d	480) d	681) c	682) b	683) a	684) d
481) d	482) d	483) a	484) b	685) b	686) b	687) d	688) c
485) b	486) c	487) c	488) d	689) a	690) d	691) c	692) b
489) c	490) d	491) d	492) b	693) d	694) c	695) c	696) c
493) d	494) d	495) a	496) a	697) a	698) d	699) d	700) d
497) b	498) c	499) d	500) d	701) d	702) a	703) c	704) d
501) b	502) d	503) c	504) b	705) a	706) b	707) c	708) a
505) c	506) b	507) d	508) d	709) b	710) b	711) b	712) a
509) b	510) d	511) a	512) a	713) c	714) a	715) a	716) a
513) b	514) d	515) c	516) c	717) c	718) b	719) c	720) a
517) c	518) a	519) b	520) c	721) d	722) a	723) b	724) a
521) a	522) a	523) d	524) d	725) d	726) d	727) b	728) d
525) c	526) b	527) c	528) a	729) b	730) b	731) b	732) a
529) a	530) b	531) d	532) b	733) b	734) c	735) a	736) c

737) d	738) a	739) c	740) d	941) c	942) a	943) d	944) d
741) a	742) d	743) a	744) b	945) d	946) c	947) c	948) b
745) a	746) c	747) a	748) b	949) a	950) c	951) a	952) d
749) b	750) a	751) c	752) d	953) c	954) c	955) b	956) c
753) a	754) a	755) c	756) d	957) b	958) a	959) c	960) b
757) b	758) c	759) a	760) d	961) a	962) c	963) a	964) d
761) a	762) d	763) a	764) c	965) c	966) b	967) d	968) a
765) c	766) a	767) b	768) d	969) a	970) a	971) b	972) a
769) c	770) c	771) b	772) d	973) d	974) c	975) d	976) b
773) a	774) d	775) a	776) b	977) b	978) d	979) b	980) b
777) c	778) b	779) a	780) d	981) d	982) a	983) b	984) b
781) b	782) d	783) d	784) a	985) d	986) c	987) b	988) b
785) b	786) b	787) d	788) d	989) c	990) d	991) c	992) c
789) d	790) c	791) c	792) b	993) d	994) c	995) c	996) d
793) a	794) c	795) d	796) c	997) b	998) d	999) a	1000) b
797) c	798) b	799) a	800) b	1001) a	1002) a	1003) a	1004) d
801) a	802) a	803) c	804) d	1005) c	1006) c	1007) b	1008) c
805) b	806) c	807) a	808) c	1009) b	1010) c	1011) c	1012) c
809) a	810) b	811) b	812) c	1013) c	1014) d	1015) b	1016) a
813) a	814) b	815) d	816) d	1017) a	1018) c	1019) a	1020) d
817) a	818) d	819) b	820) c	1021) c	1022) a	1023) d	1024) b
821) d	822) a	823) c	824) b	1025) b	1026) a	1027) a	1028) c
825) d	826) d	827) d	828) d	1029) b	1030) d	1031) c	1032) c
829) d	830) c	831) d	832) a	1033) b	1034) b	1035) d	1036) c
833) c	834) c	835) b	836) b	1037) b	1038) d	1039) a	1040) b
837) d	838) c	839) d	840) b	1041) b	1042) c	1043) d	1044) b
841) b	842) c	843) c	844) d	1045) d	1046) c	1047) c	1048) a
845) c	846) b	847) d	848) b	1049) b	1050) d	1051) b	1052) d
849) b	850) a	851) a	852) c	1053) b	1054) b	1055) a	1056) c
853) b	854) c	855) d	856) b	1057) b	1058) d	1059) c	1060) d
857) d	858) a	859) c	860) b	1061) b	1062) d	1063) d	1064) d
861) c	862) b	863) c	864) a	1065) c	1066) d	1067) c	1068) a
865) d	866) d	867) c	868) a	1069) b	1070) d	1071) a	1072) c
869) d	870) d	871) d	872) c	1073) b	1074) b	1075) a	1076) a
873) a	874) b	875) d	876) c	1077) a	1078) b	1079) a	1080) c
877) c	878) b	879) a	880) b	1081) d	1082) b	1083) c	1084) c
881) c	882) c	883) c	884) c	1085) a	1086) d	1087) a	1088) a
885) c	886) a	887) b	888) a	1089) c	1090) b	1091) c	1092) c
889) d	890) d	891) c	892) b	1093) d	1094) c	1095) b	1096) b
893) c	894) d	895) b	896) d	1097) c	1098) a	1099) a	1100) c
897) a	898) c	899) b	900) d	1101) a	1102) b	1103) c	1104) d
901) d	902) a	903) a	904) a	1105) d	1106) c	1107) d	1108) b
905) a	906) b	907) a	908) a	1109) a	1110) d	1111) d	1112) d
909) a	910) b	911) b	912) a	1113) a	1114) c	1115) a	1116) d
913) b	914) d	915) a	916) d	1117) b	1118) a	1119) a	1120) c
917) b	918) b	919) a	920) d	1121) d	1122) a	1123) b	1124) a
921) a	922) d	923) b	924) c	1125) c	1126) d	1127) c	1128) d
925) a	926) b	927) c	928) c	1129) c	1130) a	1131) c	1132) c
929) d	930) b	931) a	932) d	1133) d	1134) d	1135) c	1136) d
933) c	934) c	935) a	936) d	1137) d	1138) b	1139) d	1140) d
937) d	938) c	939) a	940) a	1141) d	1142) a	1143) c	1144) c

1145) c	1146) d	1147) b	1148) c	1281) a	1282) d	1283) c	1284) c
1149) c	1150) c	1151) d	1152) b	1285) d	1286) d	1287) c	1288) c
1153) b	1154) c	1155) b	1156) b	1289) b	1290) d	1291) d	1292) b
1157) d	1158) d	1159) d	1160) a	1293) c	1294) c	1295) d	1296) b
1161) c	1162) b	1163) d	1164) d	1297) c	1298) c	1299) b	1300) c
1165) d	1166) c	1167) d	1168) d	1301) c	1302) a	1303) d	1304) c
1169) c	1170) b	1171) a	1172) a	1305) b	1306) b	1307) a	1308) b
1173) a	1174) d	1175) b	1176) c	1309) a	1310) b	1311) c	1312) d
1177) d	1178) a	1179) d	1180) b	1313) c	1314) a	1315) b	1316) a
1181) b	1182) c	1183) a	1184) a	1317) a	1318) a	1319) b	1320) b
1185) c	1186) d	1187) b	1188) a	1321) a	1322) d	1323) b	1324) d
1189) a	1190) b	1191) a	1192) a	1325) b	1326) d	1327) d	1328) d
1193) b	1194) a	1195) b	1196) a	1329) c	1330) d	1331) a	1332) d
1197) a	1198) a	1199) d	1200) a	1333) c	1334) d	1335) c	1336) d
1201) b	1202) a	1203) a	1204) b	1337) c	1338) b	1339) b	1340) b
1205) b	1206) b	1207) a	1208) d	1341) a	1342) b	1343) d	1344) c
1209) b	1210) d	1211) b	1212) d	1345) a	1346) d	1347) a	1348) a
1213) a	1214) b	1215) c	1216) a	1349) b	1350) b	1351) a	1352) a
1217) b	1218) c	1219) c	1220) c	1353) b	1354) d	1355) b	1356) b
1221) c	1222) d	1223) c	1224) d	1357) a	1358) a	1359) d	1360) b
1225) c	1226) d	1227) b	1228) d	1361) c	1362) b	1363) d	1364) a
1229) b	1230) b	1231) a	1232) b	1365) c	1366) b	1367) d	1368) b
1233) c	1234) b	1235) b	1236) d	1369) b	1370) a	1371) a	1372) a
1237) b	1238) c	1239) d	1240) d	1373) b	1374) b	1375) a	1376) c
1241) c	1242) d	1243) a	1244) d	1377) c	1378) a	1379) d	1380) c
1245) d	1246) a	1247) a	1248) b	1381) d	1382) a	1383) c	1384) a
1249) d	1250) b	1251) b	1252) c	1385) b	1386) b	1387) d	1388) d
1253) a	1254) d	1255) c	1256) b	1389) a	1390) d	1391) d	1392) c
1257) c	1258) a	1259) b	1260) a	1393) c	1394) d	1395) b	1396) b
1261) a	1262) c	1263) d	1264) a	1397) c	1398) b	1399) c	1400) a
1265) c	1266) c	1267) b	1268) a	1401) d	1402) a	1403) b	1404) a
1269) b	1270) c	1271) b	1272) b	1405) a	1406) c	1407) c	1408) d
1273) b	1274) b	1275) d	1276) a	1409) a	1410) c		
1277) d	1278) d	1279) b	1280) a				

- (ii) $F_2 + \text{hot, conc. NaOH}$
 $4F_2 + \text{NaOH (hot)(dil)} \rightarrow 4NaF + 2H_2O + O_2$
- 24 **(d)**
 The bond energies of F_2 , Cl_2 , Br_2 , and I_2 are 159, 243, 193 and 151 J/mol.
- 26 **(d)**
 AgF is soluble in water and rest all halides of Ag are insoluble.
- 27 **(b)**
 BCl_3 is sp^2 -hybridized (120°). PCl_3 , $AsCl_3$, $BiCl_3$ are sp^2 -hybridized with one lone pair. The bond angle is contracted down the group.
- 28 **(c)**
 $2Na_2S_2O_3 + I_2 \rightarrow Na_2S_4O_6 + 2NaI$
- 29 **(c)**
 H_2SO_4 forms hydrate with water. That's why it has great affinity towards water.
- 30 **(b)**
 Ramsay discovered many (Kr, Xe, Ne) of these gases.
- 33 **(c)**
 $2KIO_3 + 5SO_2 + 4H_2O \rightarrow K_2SO_4 + 4H_2SO_4 + I_2$
- 34 **(c)**
 Used as desiccant.
- 35 **(c)**
 It is a fact. $FeS + H_2SO_4 \rightarrow FeSO_4 + H_2S \uparrow$
- 36 **(b)**
 $HNO_3 + 3HCl \rightarrow NOCl + 2H_2O + 2Cl$
- 37 **(b)**
 $NH_4NO_2 \rightarrow N_2 + 2H_2O$
- 38 **(a)**
 Fluorine reacts with H_2O .
- 39 **(a)**
 Fluorspar is CaF_2 .
- 40 **(a)**
 HI is strongest acid because $H - I$ bond is weakest bond
- 41 **(a)**
 NH_3 is a stronger base because lone pair is easily available for donation
- 42 **(c)**
 It is used in extractions of metals like Au , Pt , e.g.,

$$PtCl_4 \xrightarrow{873K} Pt + 2Cl_2$$

$$2AuCl_3 \xrightarrow{463K} 2Au + 3Cl_2$$
- 43 **(a)**
 N in NH_3 has -3 oxidation number, the lowest value of oxidation number of N .
- 44 **(b)**
 $Cl_2 + H_2O \rightarrow 2HCl + [O]$ nascent oxygen
- 45 **(a)**
 Cl_2 has disinfectant and antibacterial nature.
- 46 **(a)**
 $Sb(l) \rightarrow Sb(s)$. Vol. of $Sb(s) >$ Vol. of $Sb(l)$
- 47 **(a)**
 Follow molecular orbital diagram for O_2 .
- 48 **(b)**
 $3CaOCl_2 + 2NH_3 \rightarrow 3CaCl_2 + N_2 + 3H_2O$
- 49 **(c)**
 H_3PO_2 is monobasic acid.
- 50 **(a)**
 Acidic character of oxides increases along the period.
- 51 **(d)**
 Due to higher at. weight.
- 52 **(a)**
 $O_3 + 2KI + H_2O \rightarrow 2KOH + O_2 + I_2$
 $I_2 + \text{Starch} \rightarrow \text{Blue}$
- 53 **(d)**
 Orthophosphoric acid (H_3PO_4) is a tribasic acid because it has three replaceable hydrogen atoms. Hence the basicity of H_3PO_4 is 3. Its structure is as
-
- H_3PO_4 (tribasic acid)
- While phosphorous acid (H_3PO_3) dibasic acid because it has two replaceable hydrogen atoms. Hence the basicity of H_3PO_3 is 2. Its structure is as
-
- H_3PO_3 (dibasic acid)
- 54 **(d)**
 These are facts.
- 55 **(a)**
 Clathrate compounds are formed not by action of valence bonds but by molecules imprisonment. Inert gases do so with metals.
- 58 **(c)**
 It is a fact.
- 59 **(b)**
 AgI is a covalent compound so it is insoluble in water
- 60 **(a)**

- PH₃ is basic in nature.
- 61 (c)
It is a fact.
- 62 (c)
 $4\text{HNO}_2 + \text{P}_4\text{O}_{10} \rightarrow 2\text{N}_2\text{O}_5 + 4\text{HPO}_3$
- 63 (b)
It is a fact.
- 65 (a)
Eq. of S = Eq. of Cl; $\frac{64}{E} = \frac{71}{35.5} \therefore E = 32$
- 66 (c)
It is a fact.
- 67 (c)
Although each possesses nearly same strength.
- 68 (d)
 $2\text{H}_3\text{PO}_4 \rightarrow 2\text{HPO}_3 + 2\text{H}_2\text{O}$
- 69 (a)
Al₂O₃ is amphoteric. Rest all are basic oxide.
- 70 (d)
SO₂ acts as an oxidising agent particularly when treated with stronger reducing agents. SO₂ oxidises H₂S into S
 $\text{SO}_2 + 2\text{H}_2\text{S} \rightarrow 2\text{H}_2\text{O} + \text{S}$
- 71 (c)
Mn in KMnO₄ has highest oxidation state. It acts only as strong oxidant.
- 72 (b)
He is lightest (after H₂), non-inflammable gas.
- 73 (a)
 $\text{K}_2\text{MnF}_6 + 2\text{SbF}_5 \rightarrow 2\text{KSbF}_6 + \text{MnF}_3 + \frac{1}{2}\text{F}_2$
- 74 (d)
 $\text{N}_7 \rightarrow 1s^2 2s^2 2p^3$
d-orbitals are absent in nitrogen
- 75 (a)
Fluorine cannot be oxidized because it is the most electronegative element of periodic table.
- 76 (c)
H₂S is oxidized to colloidal sulphur or amorphous sulphur by HNO₃.
- 77 (a)
It is a fact.
- 78 (c)
H₂S₂O₇ (pyrosulphuric acid) is industrially known as oleum.
- 79 (d)
 $(\text{NH}_4)_2\text{Cr}_2\text{O}_7 \rightarrow \text{N}_2 + 4\text{H}_2\text{O} + \text{Cr}_2\text{O}_3$
- 80 (a)
Ammonium dichromate on heating gives nitrogen, chromic oxide and water.
 $(\text{NH}_4)_2\text{Cr}_2\text{O}_7 \xrightarrow{\Delta} \text{N}_2 + \text{Cr}_2\text{O}_3 + 4\text{H}_2\text{O}$

- 81 (b)
I₂ cannot oxidise Br⁻ to Br₂
- 82 (a)
 $\text{H}_2\text{PO}_4^- \xrightarrow{-\text{H}^+} \text{HPO}_4^{2-}$
Conjugate base
- 83 (a)
 $2\text{KMnO}_4 + 2\text{H}_2\text{SO}_4 \rightarrow (\text{MnO}_3)_2\text{SO}_4 + \text{K}_2\text{SO}_4 + 2\text{H}_2\text{O}$
 $(\text{MnO}_3)_2\text{SO}_4 + \text{H}_2\text{O} \rightarrow \text{Mn}_2\text{O}_7 + \text{H}_2\text{SO}_4$
Red-brown liquid
- 84 (d)
Caro's acid is the name for H₂SO₅ or peroxosulphuric acid.
- 85 (a)
F⁻ is oxidized only by electrolysis.
- 86 (d)
KO₃ and NH₄O₃ are ozonides.
- 87 (d)
O₃ is an allotrope of O₂.
- 88 (b)
PH₃ is sparingly soluble in water and has fishy smell
- 89 (c)
NO₂ on dissolution in HNO₃ imparts yellow colour.
- 91 (d)
The structure is pentagonal bipyramid having sp³d³ hybridization as given below:
-
- F_e* : Equatorial fluorine
F_a : Apical fluorine
F_e - I - *F_e* = 72° (5 angles);
F_e - I - *F_a* = 90° (10 angles).
F_e - I bond length = 1.858 ± 0.004 Å
F_a - I bond length = 1.786 ± 0.007 Å.
- 92 (a)
 $\text{PH}_3 + 4\text{Cl}_2 \rightarrow \text{PCl}_5 + 3\text{HCl}; \quad \Delta H = +ve$
- 93 (d)
 $2\text{HClO}_4 + \text{P}_2\text{O}_5 \rightarrow \text{Cl}_2\text{O}_7 + 2\text{HPO}_3$
- 94 (a)
Salts of H₃PO₃ are called as phosphite (HPO₃²⁻).
- 96 (a)
UF₆ is gas and thus, rate of diffusion of uranium isotopes is different.
- 97 (a)

It is $I(IO_3)_3$, i. e., iodine iodate.

98 (c) Ozone readily decomposes to give O_2 and thus, improves the percentage of O_2 at crowded places.

99 (d) Chlorofluoro carbon or *cfc'* on exposure to UV rays in upper strata of atmosphere dissociates to give free chlorine radicals which results in

100 (b) $FeCl_3$ acts as oxidant whereas H_2SO_3 acts as reductant.

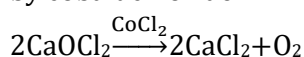
101 (c) $NaNH_2 + N_2O \xrightarrow{190^\circ C} NaN_3 + NaOH + NH_3$

102 (c) Calcium carbide is used for ripening of fruits

103 (c) Black phosphorous is highest thermodynamic stable form in red, black, white and yellow allotropic forms of phosphorus because its ignition temperature is highest hence it is inert and has a layer structure.

104 (b) On electrolysis F_2 is collected at anode.

105 (d) Reaction s of ethyl alcohol with bleaching powder to form chloroform takes place as
 $CH_3CH_2OH + Cl_2 \rightarrow CH_3 \cdot CHO + 2HCl$
 $CH_3CHO + 3Cl_2 \rightarrow CCl_3 \cdot CHO + 3HCl$
 $2CCl_3 \cdot CHO + Ca(OH)_2 \rightarrow 2CHCl_3 + (HCOO)_2Ca$
 Decomposition of bleaching powder is catalysed by cobalt chloride.



106 (a) Phosphorus glows in dark due to
 $P_4 + 5O_2 \rightarrow P_4O_{10} + \text{light}$.

107 (a) Hypophosphorus acid (H_3PO_2) is monobasic acid which act as reducing agent in this molecule two P-H bonds are responsible for its reducing character and one O-H bond is responsible for its monobasic acid character.

108 (b) Radon is used in cancer therapy.

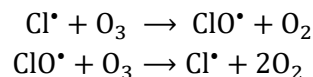
109 (d)

$$H \rightarrow O \rightarrow \overset{+}{N} \begin{array}{l} \diagup O \\ \diagdown O^- \end{array} \quad H \rightarrow O \rightarrow N=O$$

Polarity along O—H in HNO_3 is more in comparison to —O—H in HNO_2 .

110 (a) The number of lone pairs of electron on Xe atom

decomposition of O_3 causing depletion of ozone layer.



in XeF_2 , XeF_4 and XeF_6 are 3, 2 and 1 respectively

111 (d) During discharge of battery H_2SO_4 is used up.

112 (b) $AgNO_3 \xrightarrow{\Delta} Ag + NO_2 + \frac{1}{2} O_2$

113 (a) The spontaneous inflammability of phosphine with smoky rings (vortex rings) at the time of preparation is due to the presence of highly inflammable P_2H_4 . This property is used in Holme's signal.

114 (c) $H_2SO_4 + SO_3 \rightarrow H_2S_2O_7$ (Pyrosulphuric acid).

115 (c) $Cl_2 + H_2O \rightarrow 2HCl + \frac{1}{2} O_2$

116 (a) Halogen ns^2np^5 ; noble gas ns^2np^6 .

117 (c) $CuSO_4 + 4NH_3 \rightarrow [Cu(NH_3)_4]SO_4$; $Cu(NH_3)_4^{2+}$ is blue in colour.

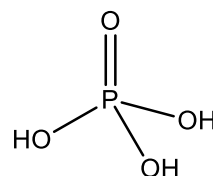
118 (c) $HgO + 2Cl_2 + H_2O \rightarrow HgCl_2 + 2HClO$

119 (a) Bones contain $Ca_3(PO_4)_2$.

120 (a) O_2 has two unpaired electrons.

121 (b) As_2O_3 is poison.

122 (a) H_3PO_4 is tribasic acid because it has three replaceable hydrogen atoms.



123 (a)

- 156 (a)
 $4\text{NH}_3 + 5\text{O}_2 \rightarrow 4\text{NO} + 6\text{H}_2\text{O}$
- 157 (c)
 ZnO is amphoteric.
- 158 (b)
 It is a fact.
- 159 (a)
 H_3PO_2 is hypophosphorus acid
- 160 (c)
 Follow methods of preparation of Xe fluorides.
- 161 (d)
 NO_2 is brown reactive gas with pungent odour, paramagnetic but dimerise to solid N_2O_4 .
- 162 (b)
 Nitrates of all the metals are water soluble.
- 163 (a)
 $\text{Xe} > \text{Kr} > \text{Ar} > \text{Ne} > \text{He}$
- 164 (d)
 All are properties of ozone.
- 165 (d)
 Halogens are very reactive due to high electronegativity, high electron affinity and comparatively low bond energies. The reactivity of halogen decreases with increase in atomic number. The correct order of reactivity of halogens is
 $\text{F}_2 > \text{Cl}_2 > \text{Br}_2 > \text{I}_2$
- 166 (a)
 $2\text{KClO}_3 + \text{I}_2 \rightarrow 2\text{KIO}_3 + \text{Cl}_2$
- 167 (a)
 $\text{CaOCl}_2 + \text{CO}_2 \rightarrow \text{CaCO}_3 + \text{Cl}_2$
- 168 (b)
 Reducing power increase in the order as $\text{HF} < \text{HCl} < \text{HBr} < \text{HI}$
- 169 (c)
 $2\text{ClO}_2 + \text{H}_2\text{O} \rightarrow \text{HClO}_3 + \text{HClO}_2$
- 170 (a)
 Red p is obtained from white p by heating it with a catalyst in an inert atmosphere.
- 172 (d)
 $\text{Cl}_2 + \text{H}_2\text{O} \rightarrow \text{HCl} + \text{HClO}$; also some Cl_2 exists in dissolved state.
- 173 (c)
 This is a fact.
- 174 (a)
 Since, noble gases are monoatomic, these do not possess vibrational energy as monoatomic molecules do not vibrate.
- 175 (b)
 This causes H-bonding in H_2O .
- 177 (a)

Rhombic sulphur occurs in S_8 molecules giving an atomicity of 8

- 178 (b)
 When chlorine is passed into hot concentrated solution of KOH, potassium chlorate is formed.
 $6\text{KOH} + 3\text{Cl}_2 \rightarrow 5\text{KCl} + \text{KClO}_3 + 3\text{H}_2\text{O}$
- 180 (c)
 $2\text{HNO}_2 \rightarrow \text{H}_2\text{O} + \text{N}_2\text{O}_3$
- 181 (b)
 $4\text{Cl}_2 + \text{Na}_2\text{S}_2\text{O}_3 + 5\text{H}_2\text{O} \rightarrow 2\text{NaHSO}_4 + 8\text{HCl}$
- 182 (b)
 Halogens exist as X_2 and the ion possesses stable noble gas configuration ns^2np^6 .
- 183 (a)
 The stability of oxides increases with increase in oxidation state of halogen.
- | Oxide | oxidation state of halogen |
|-------------------------|----------------------------|
| Cl_2O | +1 |
| ClO_2 | +4 |
| ClO_3 | +6 |
| Cl_2O_7 | +7 |
- $\therefore \text{Cl}_2\text{O}$ is least stable oxide of chlorine.
- 184 (d)
 The colour of Br_2 water is discharged by an unsaturated molecule due to addition of Br_2 on $\text{C}=\text{C}$, or by SO_2 ; $\text{SO}_2 + 2\text{H}_2\text{O} + \text{Br}_2 \rightarrow 2\text{HBr} + \text{H}_2\text{SO}_4$
- 185 (a)
 $2\text{F}_2 + 2\text{H}_2\text{O} \rightarrow 4\text{HF} + \text{O}_2$
 $3\text{F}_2 + 3\text{H}_2\text{O} \rightarrow \text{O}_3 + 6\text{HF}$
- 186 (c)
 Rest all are transition elements $(n-1)d^{10}ns^2$.
 Choice (c) represents chlorine.
- 187 (b)
 Fluorine is the strongest oxidizing agent and Xe has the lowest ionisation energy among the noble gases and has little tendency to lose electrons
- 188 (d)
 The bond strength of $\text{H}-\text{X}$ decreases from HF and HI because the dissociation energy of $\text{H}-\text{X}$ bond decreases from HF to HI.
- | Hydrogen halide | $\text{H}-\text{F}$ | $\text{H}-\text{Cl}$ | $\text{H}-\text{Br}$ | $\text{H}-\text{I}$ |
|---------------------|---------------------|----------------------|----------------------|---------------------|
| Dissociation energy | 566 | 431 | 366 | 299 |
- (kJ mol^{-1})
 HI is most volatile.
- 189 (a)
 White phosphorous on heating with aqueous solution of KOH produce phosphine (PH_3) gas
 $\text{P}_4 + 3\text{KOH} + 3\text{H}_2\text{O} \rightarrow 3\text{KH}_2\text{PO}_2 + \text{PH}_3$
- 190 (d)
 P^{32} is radioactive.

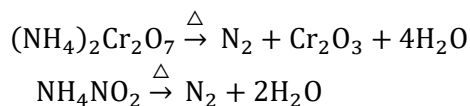
192 (a)

A binary compounds is that compound which is formed by two different elements. Metals or elements which shows variable oxidation states can form more than one binary compound. In the given compounds Fe shows +2 and +3 oxidation states. So, it can form two binary compounds with chlorine as FeCl_2 and FeCl_3 .

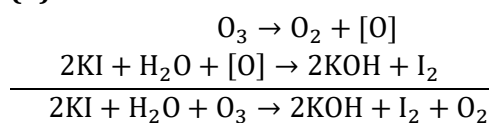
193 (d)

Due to less reactivity.

194 (a)



195 (b)



197 (d)

$\text{HgCl}_2 + \text{Hg}(\text{CN})_2 \rightarrow \text{HgCl}_2 \cdot \text{Hg}(\text{CN})_2$
Mercuric Mercuric Addition compound
Chloride cyanide

198 (b)

These do not support combustion.

199 (c)

O_2 is paramagnetic; O_3 is diamagnetic.

200 (b)

$\text{H}_2\text{S}_2\text{O}_8$ (Marshall's acid) has O—O linkage.

207 (a)

O_3 is antibacterial in nature and thus, used as sterilizing agent.

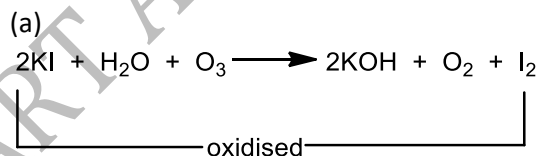
208 (b)

Welding of Mg is done in the atmosphere of He due to its inert and non-inflammable nature

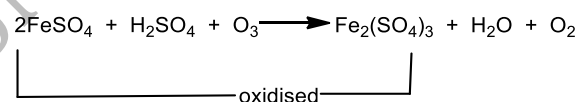
209 (a)

Rn is radioactive.

210 (c)

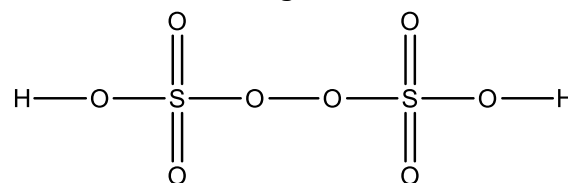


(b)



(c) $\text{KMnO}_4 + \text{O}_3 \rightarrow$ no reaction

Structure of $\text{H}_2\text{S}_2\text{O}_8$ is given as follows:



201 (c)

N, P are non-metals, As, Sb are metalloids or semimetals, Bi is metal in gp. 15

202 (d)

HF is the weakest acid.

203 (c)

Follow contact process for H_2SO_4 .

204 (d)

Metallic character increases down the gp.

205 (c)

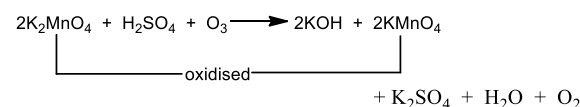


206 (b)

Noble gases have completely filled electronic configuration of outermost shell and thus, have no scope for addition of an electron in them.

Because in KMnO_4 , oxidation state of Mn is +7. Hence, it is the highest oxidation state of Mn, so KMnO_4 is not oxidized by ozone.

(d)



211 (a)

Boiling points of H₂, He, N₂, Ar are : -259°C, -268.98°C, -195.8°C, -185.7°C respectively.

- 212 (a) Fluorine and chlorine are more electronegative than sulphur, so they can displace it from its salt
- 213 (c) It is a reason for the given fact.
- 214 (d) Al becomes passive in HNO₃.
- 215 (a) It reacts with rest of all reagents.
- 216 (a) Br has the configuration.
 $1s^2, 2s^2 2p^6, 3s^2 3p^6 3d^{10}, 4s^2 4p^5$
- 217 (a) Dipole moment of gp. 15 hydrides decreases down the gp.
- 218 (b)
 $2CaO + 2Cl_2 \rightarrow CaCl_2 + Ca(ClO)_2$
- 219 (d) Oxides of nitrogen are acidic and are dissolved in KOH (alkali).
- 220 (b) Compounds of Xe, Kr and Rn are known.
- 221 (b) It is a fact.
- 222 (b) The maximum temperature at which gas can be liquefied is called its critical temperature. The gas which have high boiling point will change into liquid and so critical temperature of gas will be more
- 224 (a)
 $2KI + Cl_2 \rightarrow I_2 + 2KCl$
 $I_2 + CCl_4 \xrightarrow[\text{Cl}_2 \text{ water}]{\text{Excess of}} \text{Violet} \rightarrow \text{Colourless} + I_2$
- 225 (a) Only N₂ has 1σ + 2π bonds in its molecule.
- 227 (d) Only Al among these does not react with HNO₃.
- 228 (c)
 $NH_4Cl \rightarrow NH_3 + HCl$

1	0	0
0	1	1

∴ Calculated mol. wt. ∝ 1 molecule
Experimental mol. wt. ∝ 2 molecule
- 229 (d) Thermal stability of hydrides of nitrogen family decreases gradually from NH₃ to BiH₃.
- 230 (b) When an electric discharge is passed through Ne gas in a tube at low pressure, an orange red light is produced which is effective in the formation of chlorophyll and is used in green houses
- 231 (d) XeO₃ is an explosive compound when dry and its explosion power is 22 times more than TNT
- 232 (a) The most abundant element in the earth crust is oxygen.
- 233 (b) It is a fact.
- 234 (b) It is a fact.
- 236 (c) SO₂ acts as reducing agent in aqueous medium, as acid in basic medium and oxidizing agent in neutral medium.
- 237 (b)
 $CaC_2 + N_2 \rightarrow CaCN_2 + C$
- 238 (c) Cl₂ is oxidised (Cl₂⁰ → Cl₂⁵⁺ + 10e) and reduced (Cl₂^{2e} → 2Cl⁻) as well.
- 239 (c)
 $F_2 + H_2O \rightarrow 2HF + \frac{1}{2}O_2$
- 240 (b) Cu hydroxide forms complex with NH₃.
- 241 (d) The first ionisation energy of xenon is quite close to that of oxygen and the molecular diameter of xenon and oxygen are almost identical. Based on the above facts it is suggested that since oxygen combines with PtF₆, so xenon should also form similar compounds with PtF₆.
- 242 (d) The bond pair gets farther apart from central atom due to increasing bond length and thus, lone pair on central atom causes more contraction in bond angles.
- 243 (d) CO is neutral.
- 244 (d)
 $Ca_3(PO_4)_2 + 3SiO_2 \rightarrow 3CaSiO_3 + P_2O_5$
 $2P_2O_5 + 10C \rightarrow P_4 + 10CO$
- 245 (b) NO₂ is a brown coloured gas
- 246 (c) $KI + I_2 \rightarrow KI_3$

- 247 (d)
SO₂, H₂O and O₃ all of these act as bleaching agent.
- 248 (a)
Allotropes have different crystalline nature.
- 249 (a)
P exists as P₄, Sb exists as Sb₄.
- 250 (a)
He was detected first in solar atmosphere.
- 251 (b)
The electrolyte used in battery is 38% H₂SO₄.
- 252 (b)
Cl₂ is used in preparation of DDT-an insecticide.
- 253 (a)
Due to H-bonding, HF exists in dimeric (H₂F₂) liquid state.
- 254 (b)
Halon-1301 is CF₃Br. The first figure 1 represents no. of C atoms, the second figure represents no. of F atoms, the third figure 0 represents the no. of Cl atoms and last figure 1 represents the Br atom
- 255 (a)
It is a test for proteins.
- 256 (a)
Both XeF₂ and IF₂⁻ are linear species but the central atoms Xe and I undergo sp³d hybridisation with all the three equatorial positions occupied by lone pairs of electrons
- 257 (d)
Haber process —NH₃, birkeland —eyde process — HNO₃, solvay process — Na₂CO₃.
- 258 (d)
In rest all molecules the central non-metal atom possesses lone pair of electron which gives rise to distorted geometry.
- 259 (d)
2KClO₃ + I₂ → 2KIO₃ + Cl₂
- 260 (b)
In VIA gp, sulphur possesses the maximum tendency for catenation. The catenation order : C > Si ≈ S > P > N > O
- 261 (a)
3CaO + 2NH₃ → 3Ca + N₂ + 3H₂O
∴ N₂ gas is evolved when CaO reacts with NH₃.
- 262 (a)
Bartlett prepared first compound of Xe as Xe⁺[PtF₆]⁻, a red orange crystalline solid.
Xe + PtF₆ → Xe⁺[PtF₆]⁻
- 263 (a)
P₂O₅ is very good dehydrating agent.
- 265 (a)

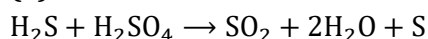
- Na₂SO₃ reacts with hot and dil, H₂SO₄ to give SO₂ gas which decolourise bromine water
Na₂SO₃ + H₂SO₄ → Na₂SO₄ + SO₂ + H₂O
Br₂ + H₂O → 2HBr + [O]
SO₂ + [O] → SO₃
decolourisation of bromine water
- 266 (c)
(NH₄)₂Cr₂O₇ → N₂ + Cr₂O₃ + 4H₂O
- 267 (c)
(NH₄)₂SO₄ + H₂O → NH₄OH + H₂SO₄
- 268 (c)
Fluorine due to its very high electronegativity oxidises sulphur to its highest oxidation state and thus, forms SF₆ where S shows its maximum coordination number
- 269 (a)
B in BCl₃ is sp²-hybridised; N in NCl₃ has sp³-hybridisation with one lone pair of electron.
- 270 (b)
Cl₂O has sp³-hybridized oxygen atom with two lone pairs.
- 271 (d)
Excitation energy of F(2p-electrons) is more than excitation energy of iodine (5p-electrons).
- 272 (d)
Rest all will give H₃PO₃.
- 273 (c)
It is an use of Ar.
- 274 (b)
CuSO₄ + 2KI → CuI₂ + K₂SO₄
2CuI₂ → 2CuI + I₂
Cuprous iodide
- 275 (b)
Atomic radius of H⁺ + atomic radius of Cl = $\frac{74}{2} + \frac{198}{2}$
- 276 (a)
3Mg + N₂ → Mg₃N₂
Mg₃N₂ + 6H₂O → 3Mg(OH)₂ + 2NH₃
- 277 (b)
In presence of slight amount of a dil acid, bleaching powder loses oxygen. Due to this nascent oxygen, it shows oxidizing and bleaching properties,
2CaOCl₂ + H₂SO₄ → CaCl₂ + CaSO₄ + 2HClO
HClO → HCl + [O]
- 278 (b)
2KClO₃ $\xrightarrow{\text{MnO}_2}$ 2KCl + 3O₂
- 279 (d)

Xe due to largest size more polarisable. He due to smallest size least polarisable.

280 (d)

Nitrolim is $\text{CaCN}_2 + \text{C}$.

281 (a)



283 (a)

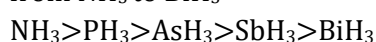
The reducing property of the hydrides of VA group increases from NH_3 to BiH_3



The tendency to donate lone pair or basic strength decreases from NH_3 to BiH_3



Thermal stability of VA group hydrides decreases from NH_3 to BiH_3



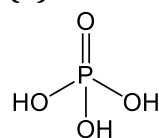
Bond angle of VA group hydrides decreases from NH_3 to BiH_3 .



284 (d)

The deficiency of iodine in diet causes goitre.

285 (b)



3-OH groups are present hence, it is tribasic

286 (d)

The solubility increases with increase in mol. wt.

287 (b)

It is a fact.

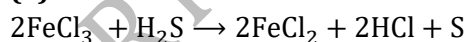
288 (c)

He is obtained during radioactive decay.

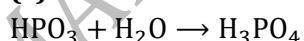
289 (d)

Zero group elements show less chemical activity because this group element has 8 electrons in outermost orbit

290 (a)



291 (c)



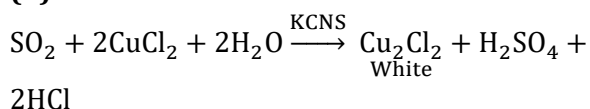
292 (d)

O_3 forms ozonides with each molecule having C=C bond or C≡C bond.

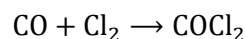
293 (d)

Argon is found abundantly in the atmosphere.

294 (d)



295 (a)



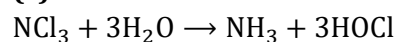
296 (d)

This is a method to separate noble gases.

297 (c)

It is a reason for the given fact.

298 (c)



299 (b)

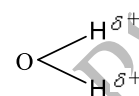
HNO_3 is strongest oxidant among all.

300 (a)

Larger is the bond length, easier is its dissociation and more is acidic nature in halogen acids.

301 (b)

Dipole of water includes dipole in noble gases which interact and causes solubility in water



302 (d)

Oxidation state of S is 0 in S_8

Oxidation state of S is +4 in SF_4

Oxidation state of S is +6 in H_2SO_4

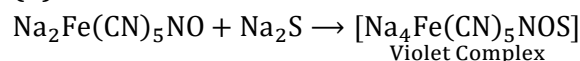
S shows 0, +4 and +6 oxidation states.

In fact S shows 0, -2, +2, +4 and +6 oxidation states,

303 (a)

H-bonding in H_2SO_4 makes it a viscous liquid.

304 (d)



305 (a)

It is a fact.

306 (b)

Pyrogallol absorbs O_2

Turpentine oil and oil of cinnamon absorb O_3 .

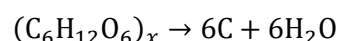
307 (b)

A test for ozone.

308 (d)

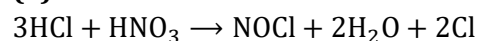
Concentrated H_2SO_4 has dehydrating property.

When cellulose comes in contact with conc H_2SO_4 , it removes water from cotton leaving only black carbon in the form of charred particles



Charred particles

309 (a)



310 (d)

H_2S has sp^3 -hybridization with two lone pairs, having V-shaped geometry, *i. e.*,



311 (d)

Dust is a colloid which shows tyndall effect. Hence, tyndall box is used to test the presence of dust in gaseous mixture, as dust decreases the effectiveness of catalyst.

312 (c)

PoO₂ is insoluble oxide of gp. 16.

313 (c)

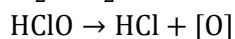
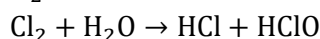
This is a laboratory method for preparation of Cl₂.

314 (b)

XeF₆ show sp³d³ hybridisation, it will give pentagonal bipyramidal geometry, but due to presence of lone pair of electron, shape will be distorted octahedral

315 (b)

Bleaching action of Cl₂ is only in presence of moisture where nascent oxygen is displaced from H₂O



316 (d)

The +5 oxidation state of Bi is unstable due to

323 (a)

N has $-\frac{1}{3}$, -3, -2, -1 oxidation states in N₃H, NH₃, N₂H₄ and NH₂OH respectively.

324 (d)

S₈ has puckered ring structure.



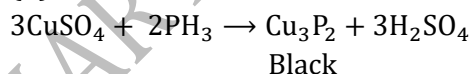
325 (d)

Ti has configuration 1s², 2s²2p⁶, 3s²3p⁶3d², 4s².

Thus, Ti⁴⁺ has configuration

1s², 2s²2p⁶, 3s²3p⁶, i.e., of Ar.

326 (b)



327 (a)

Anhydrous Ba(ClO₄)₂ is an effective drying agent. It is used under the trade name desicchlora

328 (a)

Neil Bartlett prepared first noble gas compound, xenon hexafluoride (IV)

330 (a)

The structure of H₃PO₃ is given as

inert pair effect. Thus, BiF₅ cannot be formed.

317 (a)

Mg is reductant and thus, can be oxidized.

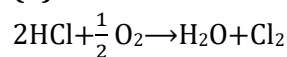
318 (a)

NH₃ is stronger base among all these.

319 (c)

${}_1\text{H}^1 + {}_1\text{H}^1 \rightarrow {}_2\text{He}^3 + \text{energy}$. This is fusion.

320 (b)

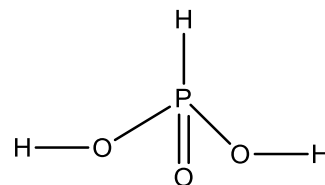
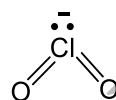


321 (c)

Only He and Ne are remained unadsorbed on the coconut charcoal at -100°C (173K) as their boiling points are less than -100°C. (He=4K, Ne=27K).

322 (c)

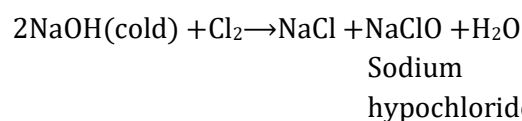
ClO₂⁻ has sp³ hybridisation and two lone pairs on halogen which produces V-shape bent structure



In this structure two —OH group are present, so it is dibasic acid. In it one P—H bond is present, so it provides hydrogen and due to such hydrogen it acts as reducing agent.

331 (d)

When chlorine reacts with dilute and cold NaOH sodium chloride and sodium hypochlorite are formed.



Let oxidation state of Cl in NaCl is x

$$+1 + x = 0$$

$$x = -1$$

Let oxidation state of Cl in NaClO is x.



$$+1 + x - 2 = 0$$

$$x - 1 = 0$$

$$x = +1$$

∴ oxidation states of chlorine changes from 0 to -1 and +1.

332 (b)

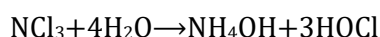
It is a fact.

333 (d)

These are uses of H_2SO_4 .

334 (c)

Hydrolysis of NCl_3 gives NH_3 or NH_4OH and $HClO$ as



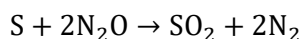
335 (c)

Xe in XeF_2 , XeF_4 ,

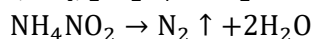
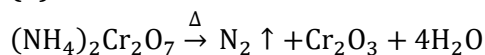
XeF_6 has sp^3d , sp^3d^2 and sp^3d^3 hybridisation with electrons respectively.

336 (c)

N_2O is itself non-combustible but supports combustion



338 (b)



339 (c)

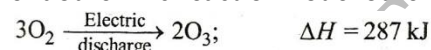
Fluorapatite is $CaF_2 \cdot 3Ca_3(PO_4)_2$.

340 (d)

It is a fact.

341 (a)

The formation of ozone from oxygen is an endothermic reaction not exothermic reaction.



So, statement



Is not correct statement.

342 (b)

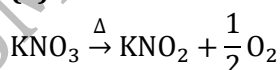


(Laughing gas)

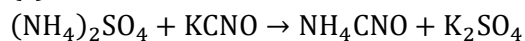
343 (c)

P_2O_5 is solid acidic oxide.

344 (a)



345 (c)



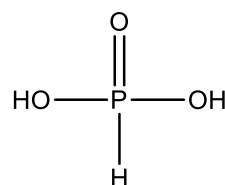
urea

346 (d)

AgI is insoluble in NH_4OH .

348 (a)

The structure of phosphorous acid H_3PO_3 is as follows



As it has two $-OH$ groups, hence it shows dibasic character

349 (a)

The thermal stability of the hydrides of nitrogen family or group 15 elements decreases on moving downwards in the group. Therefore, NH_3 is the most stable and BiH_3 is the least stable. The stability of the hydride of group 15 elements decreases in the order.



350 (d)

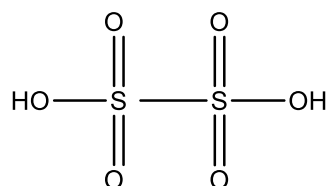
The electropositive character increases down the group, e.g., $I(CH_3COO)_3$, IPO_4 , etc., are ionic.

352 (c)

K_2CS_3 is potassium thiocarbonate.

353 (a)

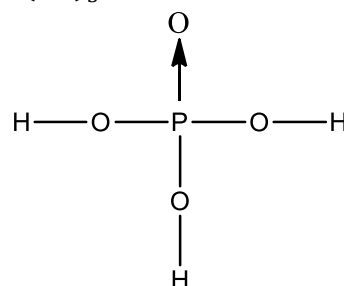
Only $H_2S_2O_6$ contains $S-S$ bond. Its structure is



354 (a)

Orthophosphoric acid (H_3PO_4) is a tribasic acid.

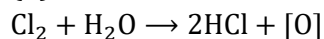
Hence, its structure can be represented as $O \leftarrow P(OH)_3$.



$$(lp + \sigma bp = 1 + 3 = 4)$$

Hence hybridization of p in H_3PO_4 is sp^3 and thus it is tetrahedral in shape.

355 (b)



356 (a)

Clathrate formation involves dipole induced dipole attraction (∵ water is polar molecule and Xe is non-polar).

357 (b)

Divers use He + O₂ mixture for respiration in place of N₂ + O₂. The N₂ was found to dissolve in blood at high pressure during diving and after it, the N₂ gas comes out from blood causing painful nerve bursting. The mixture is also used for respiration by asthma patients.

358 (d)

Ammonium nitrate on heating at 250°C gives N₂O.

359 (c)

F₂ has low reactivity for Cu and steel.

360 (a)

Due to the formation of thin oxide film on iron surface.

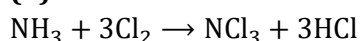
361 (d)

HF is weaker acid due to H-bonding.

362 (c)

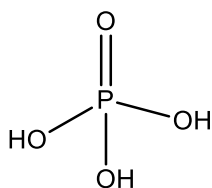
Fe(II) has four unpaired electrons (3d⁶) where Fe(III) has five unpaired electrons (3d⁵). This can be obtained by measuring magnetic moment of molecule in solid state.

363 (b)



364 (b)

The structure of H₃PO₄ is



It can lose three H⁺ ions so its basicity is three.

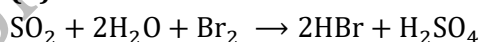
366 (d)

Chlorine, being only a slightly stronger oxidizing agent than bromine can not oxidise it to +7 oxidation state as is required for the formation of the compound BrCl₇.

367 (c)

The true peroxide contains O₂²⁻ (O – O)²⁻ ion. ∴ Out of given choices only BaO₂ has O₂²⁻ in its structure. ∴ BaO₂ is true peroxide.

368 (d)



369 (c)

Nitrogen does not have *d*-orbitals

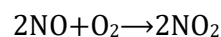
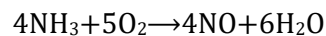
370 (d)

Pernitric acid is HNO₄.

371 (a)

Platinum acts as catalyst in the oxidation of ammonia to form nitric oxide. This reaction is used in the Ostwald's method of nitric acid

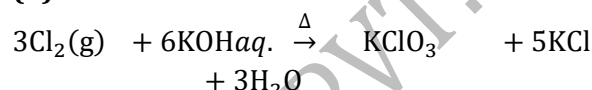
preparation.



372 (d)

Frankland and Lockyer pointed out the new D₃ line observed in the yellow region of the sun's spectrum observed by Jonsen in 1868 was due to a new element which they named Helium. It was the first noble gas to be discovered. The two known lines D₁ and D₂ were of sodium

373 (b)



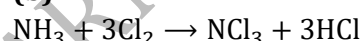
(Green yellow gas)

(Used in fire-works and safety match box)

374 (d)

It is a fact.

375 (b)



376 (d)

He, because of its small size can diffuse through rubber, glass PVC etc. easily

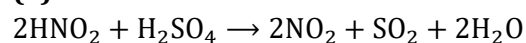
378 (a)

Orthophosphate + Amm. Molybdate $\xrightarrow[\Delta]{\text{HNO}_3}$ yellow ppt

↓ + AgNO₃

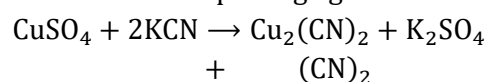
Red ppt

379 (a)

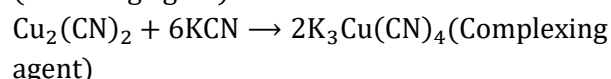


380 (c)

CN⁻ acts as complexing agent and reducing agent.



(Reducing agent)



381 (c)

Laminaria - a sea-weed containing iodine as iodide.

382 (b)

It is a fact.

383 (a)

Yellow P is readily oxidized in air and thus, kept in water.

superphosphate

of lime

408 (c)

$N_2 + O_2 \xrightarrow{3000^\circ C} 2NO$; very high temperature is required for dissociation of N_2 .

410 (a)

Some metals form amphoteric oxides, e.g., ZnO; white P is kept in water. Carbon forms neutral (CO) and acidic oxides (CO_2).

411 (c)

SO_2 is an acidic oxide and can be dried by an acidic dehydrating agent.

412 (b)

$4Zn + 10HNO_3 \rightarrow 4Zn(NO_3)_2 + NH_4NO_3 + 3H_2O$
(Very dil.)

413 (a)

H_2S has V-shape geometry (sp^3 -hybridisation with two lone pair on S atom).

414 (b)

Graham's salt is $Na(PO_3)_6$ used as water softener.

416 (b)

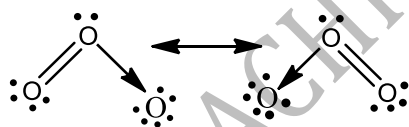
N_2 possesses high bond energy and thus, is inert.

417 (d)

It is due to heavier gas argon (at. wt. 40) present with N_2 (at. wt. 28) obtained from atmosphere. Ar is about 1% in air; the most abundant inert gas in atmosphere.

418 (b)

In O_3 , O—O bond length is identical with that of molecular oxygen. It is found to be intermediate of O—O and O=O bond length. This is due to resonance.



In ozone, bond angle of O—O—O is 116.8° and bond length(O—O) is 1.278 \AA .

419 (b)

For advertisement the coloured discharged tubes contains Ne.

420 (a)

HBr is strong reducing agent and will be oxidized to Br_2 .

421 (b)

It is a fact.

422 (c)

Heat of vaporization of NH_3 is higher in comparison with H_2O .

423 (d)

Deficiency of I_2 causes goitre disease which is related to thyroid gland.

424 (b)

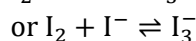
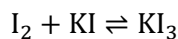
It is a fact.

425 (c)

Rest all are known.

426 (c)

Iodine has the least affinity for water and is only slightly soluble in it. However, it dissolves in 10% aqueous solution of KI due to the formation of a complex ion *ie*, I_3^-



(Complex ion)

427 (c)

Commercial ammonium carbonate having $(NH_4)_2CO_3$, NH_4HCO_3 and NH_4OCONH_2 is known as sal volatile.

428 (c)

Aqua regia is 1 part HNO_3 and 3 parts HCl.

429 (c)

A more electronegative halogen can displace less electronegative halogen



430 (d)

As the electronegativity decreases from N to Sb, the repulsion between bond pair-lone pair decreases.

431 (a)

Basic impurities on surface are removed by HCl, Acidic impurities are removed by NH_3 .

432 (b)

$FeSO_4$ solution absorbs NO to give $FeSO_4NO$.

433 (d)

I in ICl_3 has sp^3d -hybridisation having two lone pair of electrons and thus, shape is bent T in spite of trigonal bipyramidal.

434 (c)

Pyrosulphuric acid is $H_2S_2O_7$. Both SO_3 and $H_2S_2O_7$ + 6 oxidation state.

435 (a)

The oxidizing power of oxo-acids of chlorine decreases with increase with increase in oxidation no. of chlorine.

436 (d)

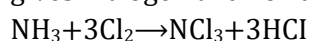
Cl can exhibit maximum oxidation state of +7.

437 (c)

$MnO_2 + 4HCl \rightarrow MnCl_2 + 2H_2O + Cl_2$ (Green-yellow)

438 (d)

Ammonia on reaction with excess of chlorine gives nitrogen trichloride.



excess

439 (d)

The spontaneous inflammability of phosphine with smoky rings (vortex rings) at the time of preparation is due to the presence of highly inflammable P_2H_4 . This property is used in Holme's signal.

440 (a)

The thermal stability of the anions of oxo-acids of chlorine increase with increasing oxidation number of halogen

442 (d)

NH_3 is non-combustible gas.

444 (d)

e.g., IF_7 ; 7 atoms of F and one of I.

445 (a)

Mixture of helium and oxygen is the life saving mixture for asthma patient because helium is less soluble in blood than nitrogen.

446 (d)

Except Xe fluorides (XeF_2 , XeF_4 , XeF_6), fluorides of Kr and Rn known are KrF_2 , KrF_4 and RnF_2 .

447 (a)

Element/elements having more electronegativity than (sulphur) can react with it to form compound of type SX_4 .

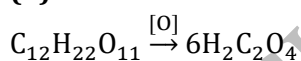
∴ Fluorine and chlorine are more electronegative than sulphur.

∴ F and Cl can form compound of SX_4 type with S.

448 (d)

Reactivity of oxygen with chlorine is minimum because of low electronegativity difference.

449 (b)

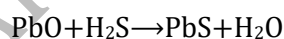


450 (c)

$COCl_2$ is called phosgene.

451 (c)

1. H_2S acts as a reducing agent, because it can reduce PbO into PbS .



(b) it is acidic in nature. In chalcogens, the acidic nature of hydride increases from H_2O to H_2Te .

(c) it is not an oxidizing agent.

452 (c)

This was a reason for the given fact.

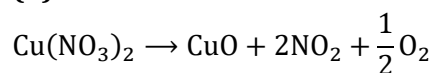
453 (d)

Oxidation states of sulphur are

-	i	H_2
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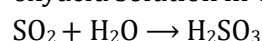
2	n	S
	i	S_8
0	n	
+	i	$S_2O_3^{2-}$
2	n	
+	i	SO
4	n	2
+	i	SO
6	n	3

455 (b)

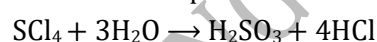


456 (b)

OF_2 dissolves in water but does not give any oxyacid solution, while SO_2 , $SOCl_2$ and SO_3 give oxyacid solution in water.



Sulphurous acid



Sulphurous acid



Sulphuric acid

457 (c)

Thus, I_2 shows complementary colour.

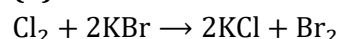
458 (b)

This is a fact or definition of clathrates of inert gases.

459 (a)

It is a fact. The radioactive mineral, cleveite, monazite, pitchblende, uranite give He either on heating to $1000^\circ C$ in vacuum or on heating with H_2SO_4 .

460 (b)

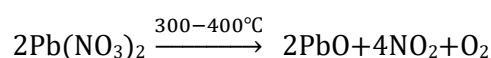


461 (d)

In group 16 and period VI the oxygen, sulphur, selenium are chalcogens (ore forming) while polonium being radioactive forms a less number of compounds and is not considered as chalcogens.

462 (a)

Lead nitrate on ignition furnish lead oxide and nitrogen dioxide with evolution of O_2 gas.



463 (a)

Xe is most easily liquefiable rare gas because interatomic interactions increases with increasing atomic number.

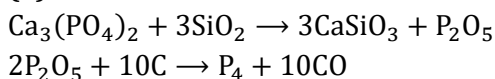
464 (c)

It is a fact.

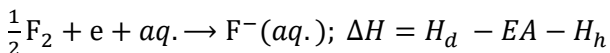
465 (d)

In atomic reactors, helium gas is used. It is also used in filling lighter air-crafts such as air ships weather balloons etc.

467 (a)



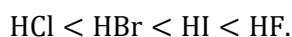
468 (c)



Heat of hydration being exothermic and maximum for fluorine because of its smaller size and thus, more negative value for ΔH is obtained for reduction of F_2 . Thus, F_2 is strong oxidant.

469 (a)

The lower is b.p., more is vapour pressure; b.p. order is:



470 (a)

Sb is semi-metal and thus, forms amphoteric oxides.

471 (a)

Bone black is polymorphic form of phosphorus. The other forms of phosphorus. The other forms of phosphorus. The other forms of phosphorus and red phosphorus.

472 (b)

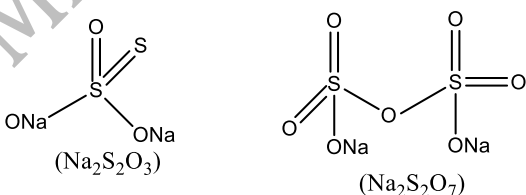
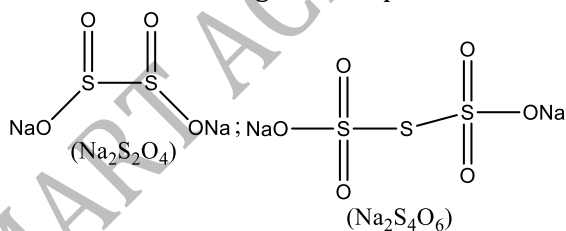
The acidic strength of oxy.acids decreases downwards in a group.

The correct order of acidic strength of oxy - acids of halogen is



473 (d)

The structure of the given compounds are as



474 (c)

It is a fact.

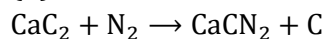
475 (d)

Due to its chemically inert nature.

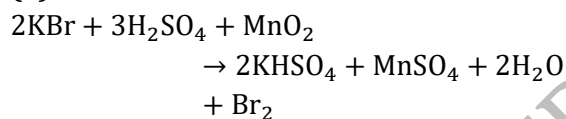
476 (d)

The inert gases producing maximum number of compounds are Ar(argon) and Xe(xenon) due to their low ionisation energy.

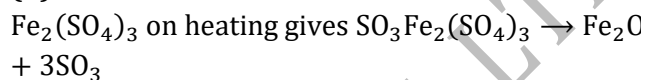
477 (d)



478 (a)



479 (d)



480 (d)

It is a fact.

482 (d)

It is a fact.

483 (a)

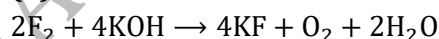
XeF_6 has much tendency to hydrolyse. The reverse reaction is more spontaneous.



484 (b)

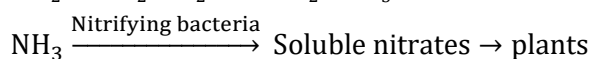
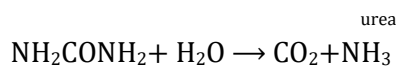
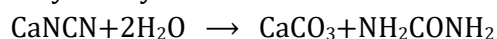
It is a fact.

485 (b)



486 (c)

Slow acting nitrogenous fertilizer is one which decomposes slowly. out of given choices CaNCN (or CaCN_2 or calcium cyanamide) decomposes very slowly.

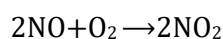
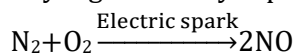


487 (c)

Liquor ammonia is concentrated solution of ammonia in water while liquid ammonia is liquefied ammonia gas.

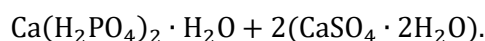
488 (d)

Rayleigh -ramsay separation method



489 (c)

As fertilizer. It is



490 (d)

These are characteristics of noble gases.

491 (d)

All are prepared using HNO_3 as one of the reagents.

- 492 (b)
Rn is the symbol for radon.
- 493 (d)
 $\text{FeSO}_4 \cdot \text{NO}$ is formed.
- 494 (d)
 $2\text{HNO}_3 + \text{P}_2\text{O}_5 \rightarrow \text{N}_2\text{O}_5 + 2\text{HPO}_3$
- 495 (a)
The phenomenon of phosphorescence shown by white phosphorus is called cold fire
- 496 (a)
Xe forms XeF_2 , XeF_4 or XeF_6 compounds with fluorine.
- 497 (b)
To provide inert atmosphere.
- 498 (c)
ppm of F = $\frac{\text{Wt. of F}}{\text{Wt. of paste}} \times 10^6 = \frac{0.2}{500} \times 10^6 = 400$
- 499 (d)
 $3\text{H}_2\text{O} + \text{PCl}_3 \rightarrow \text{H}_3\text{PO}_3 + 3\text{HCl}$
- 500 (d)
 I_2 itself imparts violet colour.
- 501 (b)
Xe is meant stranger
- 502 (d)
These are characteristics of noble gases.
- 503 (c)
 $2\text{Cr}_4^{2-} + 2\text{H}^+ \rightarrow \text{Cr}_2\text{O}_7^{2-} + \text{H}_2\text{O}$
- 504 (b)
A halate will be formed from halogen and the greenish yellow gas is Cl_2 . The halate which is used in fireworks and safety matches is KClO_3
 $3\text{Cl}_2 + 6\text{KOH} \rightarrow \text{KClO}_3 + 5\text{HCl} + 3\text{H}_2\text{O}$
- 505 (c)
The inorganic nitrogen exists in the form of ammonia, which may be lost as gas to the atmosphere, may be acted upon by nitrifying bacteria or may be taken up directly by plants
- 506 (b)
Pseudohalides are uninegative groups which show certain characteristics of halide ions, e.g., CN^- , SeCN^- , SCN^- , N_3^- , OCN^- , NCO^-
- 507 (d)
 $\text{CaCO}_3 + 2\text{HNO}_3 \rightarrow \text{Ca}(\text{NO}_3)_2 + \text{H}_2\text{O} + \text{CO}_2$
- 508 (d)
It is a fact.
- 509 (b)
 XeF_2 , XeF_4 , XeF_6 are formed by xenone
- 510 (d)
 N_2O_5 is white crystalline solid which melts at 30°C
- 511 (a)
Lone pair density is maximum in NH_3 due to its small size.
- 512 (a)
 H_2F_2 is weakly ionized due to H-bonding.
- 513 (b)
Larger is size and mol. wt. more are van der Waals' forces among molecule.
- 515 (c)
 $\text{SO}_2 + \text{Cl}_2 \rightarrow \text{SO}_2\text{Cl}_2$
- 516 (c)
 PH_5 is not known.
- 517 (c)
 $3\text{H}_2\text{O} + 3\text{F}_2 \rightarrow 6\text{HF} + \text{O}_3$
- 518 (a)
Nitrogen does not possess $2d$ -subshell and thus, cannot excite its $2s$ paired electron to get unpaired whereas phosphorus does so on account of availability of $3d$ -subshell.
- 519 (b)
A more electronegative halogen displaces less electronegative halogen from its halide. Fluorine is more electronegative than chlorine hence, it can displace Cl from HCl while chlorine cannot displace fluorine from HF. Therefore, the following reaction is not valid.
 $\text{HF} + \text{Cl}_2 \rightarrow \text{F}_2 + \text{HCl}$
- 520 (c)
More is the electronegativity of central atom (of non-metal) more is acidic nature of oxo-acid.
- 521 (a)
 $2\text{NH}_3 + 3\text{Cl}_2 \rightarrow 2\text{NCl}_3 + 3\text{HCl}$
- 522 (a)
COOH
|
Conc H_2SO_4
|
COOH
 $\xrightarrow{\hspace{2cm}} \text{H}_2\text{O} + \text{CO} + \text{CO}_2$
- 523 (d)
 Cl_2O and HClO both have Cl in + 1 oxidation state.
- 524 (d)
 $2\text{F}_2 + 2\text{NaOH} \rightarrow 2\text{NaF} + \text{OF}_2 + \text{H}_2\text{O}$
- 525 (c)
 I_2 forms complex ion I_3^- in KI solution due to which it dissolves in it.
- 526 (b)
The boiling point of NH_3 is higher due to the presence of hydrogen bonding. The order of boiling point of hydrides of nitrogen family is as
Hydride: $\text{PH}_3 < \text{AsH}_3 < \text{NH}_3 < \text{SbH}_3$
B.P. : 185 218 239.6 256.
- 527 (c)
Rest all are uses of H_2SO_4 .
- 528 (a)

Clevite is uranium mineral, on heating it gives He

529 (a)

$\ddot{\text{N}}\text{H}_3$ and PH_3 both are basic because of the presence of lone pair of electrons

530 (b)

Both O and Cl is electronegative elements so O does not readily react with Cl

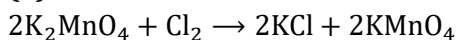
531 (d)

In case of Cl_2O_7 , Cl has +7 oxidation state(oxidation state) and also have highest oxygen content . So it is most acidic.

532 (b)

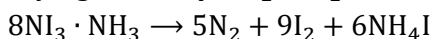
Sulphur possesses maximum bond energy for catenation in VI gp. members.

533 (a)

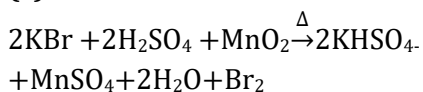


535 (c)

On rubbing liquor NH_3 with I_2 flakes, a dark brown ppt. of ammoniated nitrogen iodide, $\text{NH}_3 \cdot \text{NI}_3$ is obtained, which decomposes quickly on drying into $\text{NH}_4\text{I} + \text{I}_2 + \text{N}_2$.



536 (c)



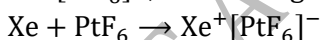
537 (d)

Lower is the ionization potential of an element more would be its reducing power and also reactivity.

As we move down the group, the reactivity of noble gases increase due to the decrease ionization energy. Hence, xenon is most reactive.

538 (b)

Bartlett prepared first compound of Xe as $\text{Xe}^+[\text{PtF}_6]^-$, a red orange crystalline solid.



539 (a)

The function of $\text{Fe}(\text{OH})_3$ in the contact process is to remove arsenic impurity. $\text{Fe}(\text{OH})_3$ is a positive sol, hence it removes arsenic impurity which is a negative sol.

540 (a)

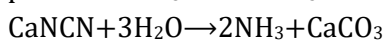
A clear solution in water is not formed because of (

542 (b)

P_2O_5 reacts with NH_3 in presence of moisture.

543 (c)

Calcium cyanamide on treatment with steam produces NH_3 and CaCO_3 .



544 (c)

Helium is twice as heavy as hydrogen, its lifting power is 92% of that of hydrogen. Helium has the lowest melting point of any element which makes liquid helium an ideal coolant for many extremely low temperature application such as crystals, a sophisticated measuring instrument based on super conducting magnet and cryogenic research where, temperature close to absolute zero are needed

545 (b)

Rest all react with HBr.

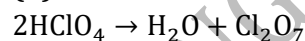
546 (a)

Cl in ClO_4^- has highest oxidation number and can b

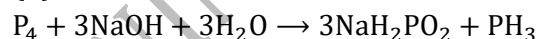
547 (a)

Bi_2O_3 is most basic; SeO_2 , Al_2O_3 and Sb_2O_3 are am

548 (b)

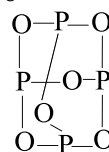


549 (b)



550 (c)

Each P in P_4O_6 has 3P—O bonds;



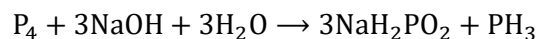
551 (c)

It is due to heavier gas argon (at. wt. 40) present with N_2 (at. wt. 28) obtained from atmosphere. Ar is about 1% in air; the most abundant inert gas in atmosphere.

552 (c)



553 (d)



P is oxidised (zero to + 1 oxidation state in NaH_2PO_2) as well as reduced (zero to - 3 oxidation state in PH_3).

554 (b)

$\text{H}_2\text{S}_2\text{O}_4$ —dithionous acid

$\text{H}_2\text{S}_2\text{O}_6$ —dithionic acid

$\text{H}_2\text{S}_2\text{O}_5$ —disulphurous acid

$\text{H}_2\text{S}_2\text{O}_7$ — disulphuric acid

555 (d)

Pseudohalide they are combination of more than one electronegative atoms which one unit negative charge, e.g. OCN^- , CN^- .

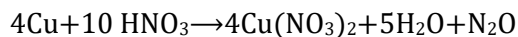
Polyhalide ions the complex ions which are formed by reaction of halogens among themselves are called polyhalide ions e.g., I_3^- , BrI_2^- .

into vapours directly. Iodine is found in solid state while F_2 and Cl_2 are found in gaseous state and Br_2 is found in liquid state. so, iodine can be purified by sublimation.

587 (a)

NH_3 is a polar molecule.

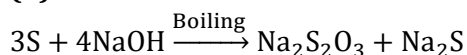
588 (a)



589 (b)

Rest all are characteristics of HNO_3 .

590 (b)



591 (d)

These do not possess the tendency to react.

592 (d)

Black P is metallic form of P.

593 (d)

SO_2 is gas.

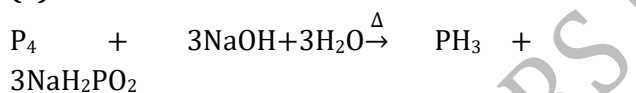
594 (a)

It is a fact.

595 (d)

SO_2 acts as a reducing agent, oxidising agent and as a bleaching agent. It does not act as dehydrating agent.

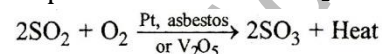
596 (a)



white phosphorus phosphine sod,
hypophosphate

598 (b)

Platinised asbestos or vanadium pentoxide (V_2O_5) is used as catalyst in the preparation of sulphur trioxide from SO_2 and oxygen.



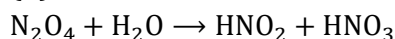
599 (a)

Liquid helium is used in very low temperature thermometer

600 (a)

Xenon forms maximum number of chemical compounds because it has lowest ionization potential among noble gases. (i.e., among the He, Ne, Kr and Xe).

601 (d)



602 (c)

MnO_2 is used as depolariser in Leclanche cell.

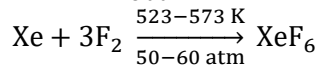
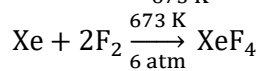
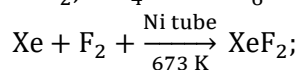
603 (c)

Helium is not used to produce and sustain

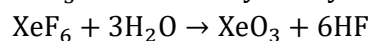
powerful superconducting magnets. All others are the uses of helium.

604 (a)

XeF_2 , XeF_4 and XeF_6 can be directly prepared

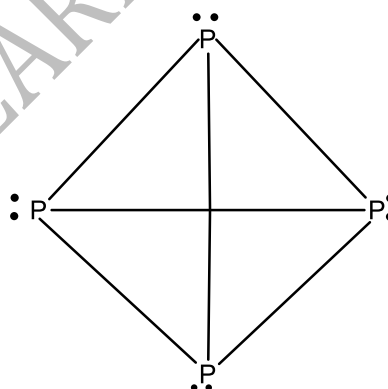


XeO_3 is obtained by the hydrolysis of XeF_6



605 (b)

Phosphorus exists in several allotropic forms. out of them red and white are most common or red phosphorus is most stable form of phosphorus. white phosphorus or yellow phosphorus is the most reactive and poisonous allotrope of phosphorus. it is solid at room temperature it catches fire in air hence kept in water it has tetrahedral structure.



White phosphorus (tetrahedral solid)

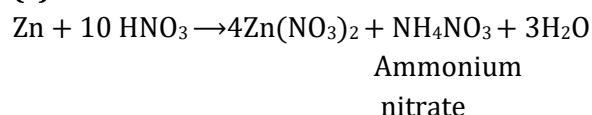
606 (b)

Red phosphorus and antimony sulphide are used for coating of sides of match box

607 (b)

Chromyl chloride test is for Cl^- .

608 (c)



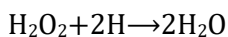
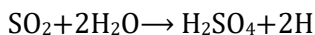
\therefore Zn reacts with cold dil HNO_3 to produce NH_4NO_3

With dil. HNO_3 it produces N_2O (nitrous oxide)

With conc. HNO_3 it produces NO_2 (nitrous oxide)

609 (b)

In presence of moisture, SO_2 acts as a reducing agent as it gives nascent hydrogen. It reduces hydrogen peroxide into water.



610 (d)

Due to large size of iodine, in HI strong van der Waals' forces are present, Hence, it has highest molar heat of vaporization

611 (d)

SO_2 has all these properties.

613 (d)

Liquid ammonia is used in refrigeration because it has high heat of vaporisation

615 (c)

20.24% HCl

+ H_2O mixture is azeotropic mixture boils at 110°C

616 (c)

It is a fact.

617 (d)

P exists as P_4 .

618 (b)

White phosphorus is soluble in CS_2 whereas red phosphorus is insoluble in it

619 (a)

In PCl_5 two P—Cl bonds are axially located and three are equatorial. Thus, two P—Cl bonds are weaker than other three.

620 (b)

The acidic character of oxides decreases down the group.

621 (b)

King of chemicals is H_2SO_4 . The economy of a country is measured in terms of consumption of H_2SO_4 .

622 (c)

Fluorine has Highest E_{red}° (equal to + 2.9 V) due to which it can easily accept an electron and hence it is the best oxidising agent.

623 (d)

F is most electronegative halogen.

624 (a)

It is a fact.

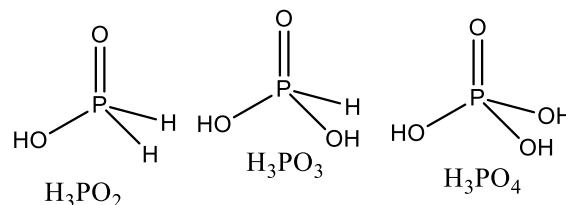
625 (c)

The strongest oxidizing agent among all elements is

626 (d)

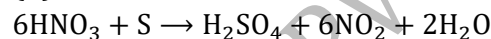
All the elements of gp. 16 show polymorphism or allotropy.

627 (c)



Although the number of —OH groups is increasing in H_3PO_2 (1 OH group), H_3PO_3 (2 OH group) and H_3PO_4 (3 OH group), yet acidity does not increase much. This is due to the fact that the number of unprotonated oxygen, responsible for enhancement of acidity due to inductive effect, remains the same, as a result dissociation constant also remains nearly same.

628 (d)



629 (a)

In liquid state, HF shows proton donor tendency and HCl acts as proton acceptor.

630 (d)

It is a reason for the given fact.

631 (d)

Rest all acids have +5 oxidation state as in P_2O_5 . In H_3PO_3 oxidation state of P is +3.

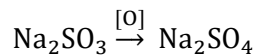
632 (c)

NO_2 is converted into liquid state.

633 (c)

Rest all halogens react with Sulphur.

634 (b)



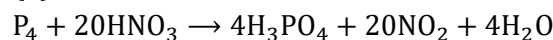
635 (b)

Xe in XeF_4 has sp^3d^2 -hybridisation with two lone pair of electrons giving rise to square planar geometry.

636 (d)

It is a fact. Follow fixation of N_2 .

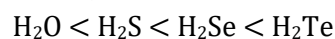
637 (a)



638 (b)

The acidic nature increases from H_2O to H_2Te . The increase in acidic character of hydrides on moving down the group may be explained in terms of bond length of H—M bond, larger is bond length lesser is bond energy and thus easier is ionization of H—M bond or easier is proton donor nature.

Hence,



639 (a)

Chlorine heptaoxide (Cl_2O_7) is the anhydride of perchloric acid.

- 640 (a) $2\text{HClO}_4 \xrightarrow{\Delta} \text{Cl}_2\text{O}_7 + \text{H}_2\text{O}$
The inorganic nitrogen exists in the form of ammonia which may be lost as gas to atmosphere may be acted upon by nitrifying bacteria or may be taken up directly by plants.
- 641 (b) F has smallest size.
- 642 (a) F_2 and Cl_2 have no action on starch solution; Br_2 t
- 643 (b) $2\text{KMnO}_4 + 5\text{H}_2\text{S} + 3\text{H}_2\text{SO}_4 \rightarrow \text{K}_2\text{SO}_4 + 2\text{MnSO}_4 + 8\text{H}_2\text{O} + 5\text{S}$
- 644 (a) $\text{PH}_3 + 4\text{Cl}_2 \rightarrow \text{PCl}_5 + 3\text{HCl}$
- 645 (b) Bleaching powder liberates Cl_2 on standing.
- 646 (c) Hyponitrous acid is $\text{H}_2\text{N}_2\text{O}_2$ or HNO .
- 647 (b) This is the laboratory method of preparing phosphine gas.
 $\text{P}_4 + 3\text{NaOH} + 3\text{H}_2\text{O} \rightarrow \text{PH}_3 + 3\text{NaH}_2\text{PO}_2$
phosphine
- 648 (c) $\text{Cl}_2 + \text{H}_2\text{O} \rightarrow \text{HOCl} + \text{HCl}$
(X)
 $\text{AgNO}_3 + \text{HCl} \rightarrow \text{AgCl} + \text{HNO}_3$
 $\text{Mg} + 2\text{HCl} \rightarrow \text{MgCl}_2 + \text{H}_2$
(Y)
- 649 (c) Each element on two sides of change has same oxidation no.
- 650 (d) $2\text{KMnO}_4 \xrightarrow{\Delta} \text{K}_2\text{MnO}_4 + 4\text{MnO}_2 + \text{O}_2$
- 651 (c) A gas is converted into liquid or solid state by increasing van der Waals' forces.
- 652 (b) $2\text{MnO}_2 + 4\text{KOH} + \text{O}_2 \rightarrow \text{K}_2\text{MnO}_4 + 2\text{H}_2\text{O}$
- 653 (b) Phosphorus pentoxide acts as a powerful dehydrating agent. It dehydrates HNO_3 to N_2O_5 , H_2SO_4 to SO_3 , HClO_4 to Cl_2O_7 etc.
 $4\text{HNO}_3 + \text{P}_4\text{O}_{10} \rightarrow 2\text{N}_2\text{O}_5 + 4\text{HPO}_3$
 $2\text{H}_2\text{SO}_4 + \text{P}_4\text{O}_{10} \rightarrow 2\text{SO}_3 + 4\text{HPO}_3$
 $4\text{HClO}_4 + \text{P}_4\text{O}_{10} \rightarrow 2\text{Cl}_2\text{O}_7 + 4\text{HPO}_3$
- 654 (c) H_2SO_4 acts as dehydrating agent in following reaction
- 655 (d) $\text{HCOOH} \xrightarrow{\text{H}_2\text{SO}_4} \text{CO} + \text{H}_2\text{O}$
All these are hydrolysed in presence of water.
- 656 (c) $2\text{CaO} \cdot \text{MnO}_2$ is called weldon mud.
- 657 (d) It is a fact $(2\text{H}_2\text{SO}_4 + 2\text{NO} + \text{O}_2 \rightarrow 2\text{NO} \cdot \text{HSO}_4 + 2\text{H}_2\text{O})$
- 658 (c) P in PCl_5 has sp^3d -hybridization.
- 659 (b) Perhalates are strong oxidants and their oxidizing nature order is: $\text{BrO}_4^- > \text{ClO}_4^- > \text{IO}_4^-$.
- 660 (b) About 1/100th part of air is mixture of inert gases.
- 661 (d) $3\text{HOCl} \rightarrow 2\text{HCl} + \text{HClO}_3$
- 663 (c) NH_4Cl sublimes and decomposes partially to smell NH_3 .
- 664 (c) S in SO_4^{2-} is sp^3 -hybridized.
- 665 (a) Dithionous acid ($\text{H}_2\text{S}_2\text{O}_4$) has sulphur in + 3 oxidation state
- 666 (a) Oleum is $\text{H}_2\text{S}_2\text{O}_7$ which is obtained by dissolving SO_3 in H_2SO_4 and is also called as fuming sulphuric acid
- 667 (c) $\text{He} \rightarrow \text{He}^+$
- 668 (d) $\text{HNO}_3 \rightarrow 4\text{NO}_2 + 2\text{H}_2\text{O} + \text{O}_2$
- 669 (b) Carnallite is K, Mg chloride and bromide.
- 670 (b) O_3 is a blue coloured gas.
- 671 (c) $\text{N}_2 + 3\text{H}_2 \xrightarrow{\text{Fe}} 2\text{NH}_3$ (Mo is promoter).
- 672 (b) $3\text{HCl} + \text{HNO}_3 \rightarrow \text{NOCl} + 2\text{H}_2\text{O} + \text{Cl}_2$
- 673 (b) Phosgene does not contain any metal in it. Therefore, it will not produce metal sulphide with H_2O . All others give corresponding metal sulphides such as Cds, Zns and CuS
- 674 (d) Sulphur occurs in native form in the volcanic region.

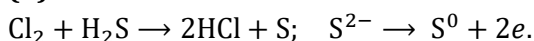
675 (b)

KrF₂ is a F⁻ donor and form complexes with F⁻ acceptors where, only cationic species or Kr will be present

676 (a)

XeO₃ has sp³-hybridization with trigonal pyramid geometry.

677 (b)



678 (d)

It is a reason for the given fact.

679 (b)

In F₂O the oxidation state of O is + 2 *ie*, positive whereas, in other compounds such as CO, NO, N₂O it is -2

680 (b)

Poisson's ratio $\gamma = \frac{c_p}{c_v} = 1.66$, because inert gases are monoatomic.

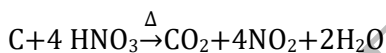
681 (c)

Noble gases are present in atmosphere in minute quantities except Rn, which is radioactive and is formed by decay of Ra.

682 (b)

P₄ has six P—P bonds, four lone pair of electrons and

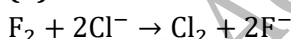
683 (a)



684 (d)

The bond order for He₂ = 0 and thus molecules is non-existent.

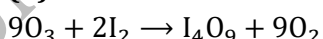
685 (b)



686 (b)

Due to the less reactivity, red phosphorus is most stable

687 (d)

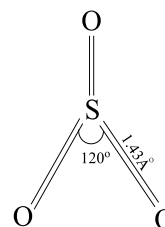


688 (c)

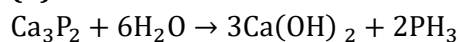
Yellow colour is complementary colour to violet.

689 (a)

SO₃ has sp²-hybridization on S atom having geometry.



690 (d)



PH₃ contain P₂H₄ as an impurity which on burning gives P₂O₅ and white smoke

691 (c)

It is a fact.

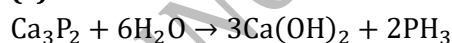
692 (b)

An important reaction of PCl₅ is to replace OH gp. by Cl.

693 (d)

Chalcogens are ore forming elements.

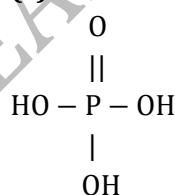
694 (c)



695 (c)

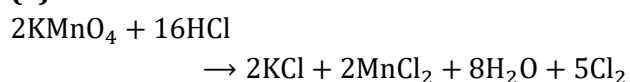
Ar is more soluble in water than O₂ and N₂ and also He

696 (c)



it ionizes in three steps because three -OH groups are present

697 (a)



698 (d)

All other oxides of nitrogen except N₂O and NO are acidic nature.

699 (d)

Pseudohalide ion and pseudohalogens There are certain monovalent negative ions made up of two or more electronegative atoms which exhibit properties similar to these of halide ions. Such ions are known as pseudohalide ions. Just as halide ions, pseudohalide ions have also corresponding dimeric molecules these are called pseudohalogens and show properties similar to those of halogens, *eg*, Cl⁻ and CN⁻

700 (d)

Nessler's reagent is K₂HgI₄.

701 (d)

Due to smaller electronegativity differences in

between two halogens.

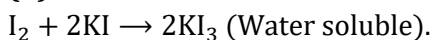
702 (a)

It is a reason for the given fact.

703 (c)

As acts as poison for Pt in contact process.

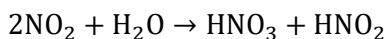
704 (d)



705 (a)

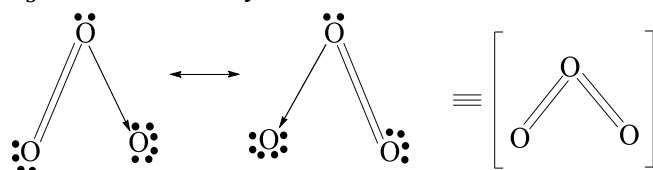
Traces of iodine accelerate the transformation of white P into red P at relatively lower temperature.

707 (c)

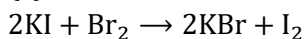


712 (a)

O₃ is a resonance hybrid of

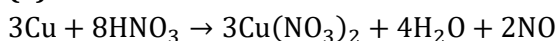


713 (c)

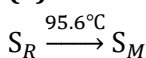


Starch + I₂ → Blue colour.

714 (a)



715 (a)



716 (a)

719 (c)

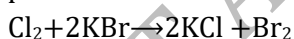
Mn in KMnO₄ can be reduced; because only KMnO₄ is oxidant.

720 (a)

NO₂ is given out during the process which is responsible for yellow colour of HNO₃.

721 (d)

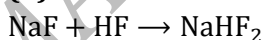
Chlorine can replace bromine from KBr solution. as it is placed above bromine in VIIA group in periodic table.



722 (a)

AgF is water soluble.

723 (b)



725 (d)

An oxygen-helium mixture is used for artificial respiration in deep sea diving instead of air because nitrogen present in air dissolves in blood under high pressure when sea diver goes into deep sea. When he comes to the surface, nitrogen bubbles out of the blood due to decrease in pressure, causing pains. This disease is called bends

726 (d)

708 (a)

It is a use of He.

709 (b)

N₂O has anaesthetic nature used in dental surgery.

710 (b)

Rest all acids act as oxidant and oxidise Cu and Ag. Note Cu and Ag are placed below H in electrochemical series and do not liberate H₂ from acids.

711 (b)

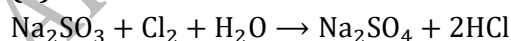
O¹⁶, O¹⁷, and O¹⁸

HBr is reducing agent, H₂SO₄ is oxidizing agent.

717 (c)

It is a fact.

718 (b)

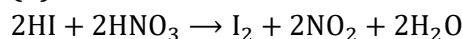


Due to inert pair effect.

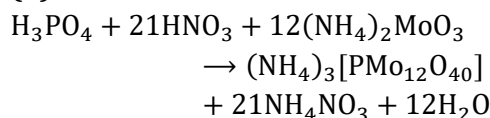
727 (b)

It is a reason for the given fact.

728 (d)



729 (b)



730 (b)

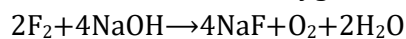
Air contains 1% argon which is heavier than N₂.

731 (b)

It is the nature and use of antichlor.

732 (a)

F₂ on reaction with hot and conc. Alkali gives sodium fluoride and oxygen.



733 (b)

XeOF₄ gives sp³d³ hybridisation. Due to presence of one lone pair it gives square pyramidal geometry

734 (c)

Oleum is obtained by dissolving sulphur trioxide in H_2SO_4



oleum

Oleum is also called fuming sulphuric acid because it fumes in moist air due to sulphur trioxide.

735 (a)

It is a characteristic of white phosphorus.

736 (c)

Caliche is crude chile salt petre (NaNO_3) which contains about 0.02% iodine as sodium iodate (NaIO_3), from which iodine is extracted

737 (d)

The electron affinity of halogens decreases down the group.

738 (a)

Interhalogen compounds are made up of two halogen atoms.

739 (c)

The spontaneous inflammability of phosphine with smoky rings (vortex rings) at the time of preparation is due to the presence of highly inflammable P_2H_4 . This property is used in Holme's signal.

740 (d)

$\text{P} + \text{O}_2 \rightarrow$ phosphorus oxide + light, the phenomenon is called chemiluminescence, *i. e.*, the phenomenon of emitting light as a result of chemical change.

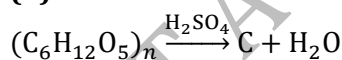
741 (a)

F_2O is formed.

F is more electronegative than oxygen.

Oxygen is second most electronegative element.

742 (d)



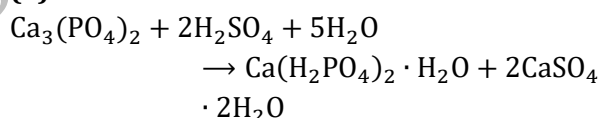
743 (a)

Ne has van der Waals' radius, whereas in O_2 , covalent radius is reported.

744 (b)



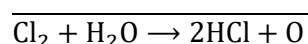
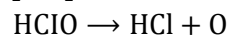
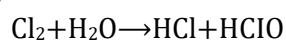
745 (a)



746 (c)

Chlorine acts as oxidising and bleaching agent in the presence of moisture. Chlorine reacts with water forming HCl and HClOz. HClO further decomposes to give nascent oxygen which is

responsible for oxidising and bleaching properties of chlorine. Thus in chlorine water, oxidising agent is HOCl.



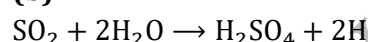
747 (a)

F_2 } gases
 Cl_2 }

$\text{Br}_2 \rightarrow$ liquid

$\text{I}_2 \rightarrow$ solid

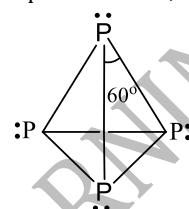
748 (b)



Coloured matter + H \rightarrow Colourless.

749 (b)

P_4 molecules,



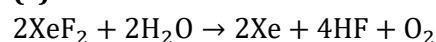
Bond angle = 60°

Six P - P single bonds, lone pair = 4

750 (a)

N in N_2O_3 and HNO_2 has +3 oxidation state.

751 (c)



752 (d)

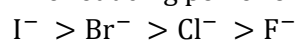
—do—

753 (a)

ClO_3 has 41 electrons and thus, at least one electro

754 (a)

The reducing power of halide ions is:

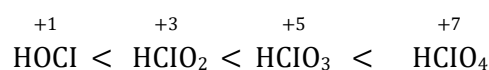


755 (c)

Rest all react directly with N_2 .

756 (d)

Perchloric acid (HClO_4) is the strongest acid among these because the acidic character of oxoacid increases with increasing the oxidation number of a particular halogen atom.

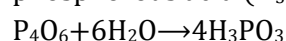


757 (b)

Ionization potential decreases down the gp.

758 (c)

When phosphorus trioxide is dissolved in water phosphorous acid (H_3PO_3) is formed



The boiling point of inert gases increases with increases in molecular weight due to increase in van der Waal's forces.

∴ Xe has largest size, among inert gases.

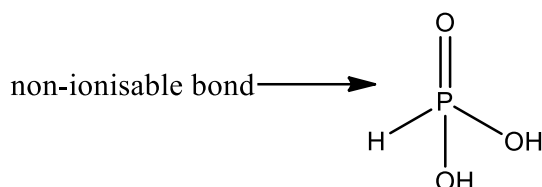
∴ Xe has highest boiling point.

785 (b)

HPO₃ is called metaphosphoric acid.

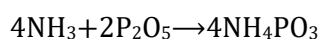
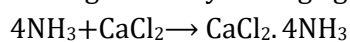
786 (b)

Structure of H₃PO₃ is



788 (d)

Quick lime CaO is used to dry ammonia as with other given dehydrating agents ammonia reacts.



Ca(OH)₂ is never used as dehydrating agent.

789 (d)

The bond dissociation energy of Cl₂, Br₂, and I₂ is as

Molecule : Cl₂ > Br₂ > I₂

Dissociation : 242.6 192.8 151.1

Enthalpy (kJ mol⁻¹)

790 (c)



791 (c)

Liquid He is a unique liquid as it exists in two forms, He(I) and He(II). He(I) is a normal liquid with normal properties. On cooling to 2.19 K and 38 mm pressure it changes to He(II) with abrupt changes in many physical properties such as density, dielectric constant and specific heat. He(II) is super fluid or quantum mechanical liquid. It has very high heat of conductance (600 times of Cu), low viscosity (1/100 of H₂ gas) and flat meniscus (a low surface tension).

792 (b)

The basic character of hydrides decreases down the gp.

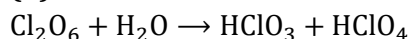
793 (a)

Lower electronegativity and lower oxidation state of the central atom favours the formation of more basic oxide of element. Therefore, Bi₂O₃ is most basic oxide

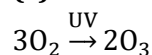
794 (c)

SO₂ bleaches by reduction, Cl₂ by oxidation.

795 (d)

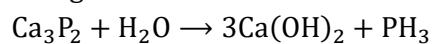


796 (c)



798 (b)

The spontaneous inflammability of phosphine with smoky rings (vortex rings) at the time of preparation is due to the presence of highly inflammable P₂H₄. This property is used in Holme's signal.



P₂H₄ is also produced.

799 (a)

It is a fact.

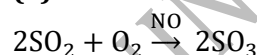
800 (b)

Sulphur does not form pπ - pπ bond due to its larger size, hence does not exist as S₂ molecules.

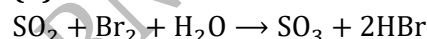
801 (a)



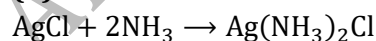
802 (a)



804 (d)

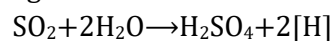


805 (b)

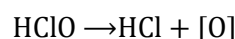
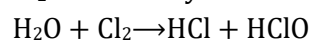


806 (c)

The pair of SO₂ and Cl₂ has bleaching property. In presence of moisture, SO₂ acts as a bleaching agent.



The nascent hydrogen bleaches the colour of the substance, thus SO₂ bleaches by reduction while Cl₂ bleaches by oxidation.



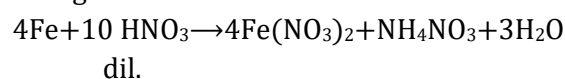
[O] + coloured substance → colourless substances

807 (a)

HCl is better called chloride.

808 (c)

Iron is oxidized to ferrous nitrate and nitric acid is changed to ammonium nitrate.



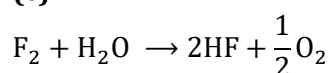
809 (a)

Members of group 15 or VA of periodic table are called pnicogens. they include N, P, As, Sb and Bi.

810 (b)

It is a fact.

812 (c)



813 (a)

It is a reason for given fact.

814 (b)

It is a fact.

815 (d)

Each has one lone pair on Xe atom.

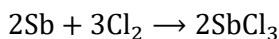
816 (d)

HClO

→ HCl

+ [O]. Thus, oxidizing and bleaching agents.

817 (a)



818 (d)

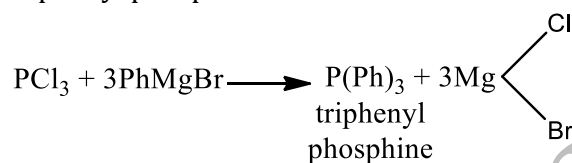
Bromargyrite is a mineral of bromine.

819 (b)

He is lightest (after H₂), non-inflammable gas.

820 (c)

When phosphorus trichloride reacts with phenyl magnesium bromide (Grignard's reagent), all the three chlorine atoms of PCl₃ are replaced by phenyl group of phenyl magnesium bromide and triphenyl phosphine is obtained



821 (d)

Rest all reacts with water to give NH₃.

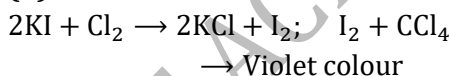
822 (a)

Bond length increases with size of the atom involved in bonding.

823 (c)

N≡N. This possesses high bond energy.

824 (b)



(lower layer because CCl₄ is heavier than water).

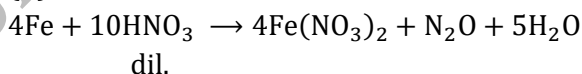
826 (d)

Cl₂ reacts with C₂H₂ to give westron and westroso

827 (d)

Each member of gp. 16 show polymorphism.

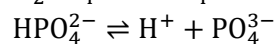
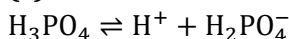
828 (d)



829 (d)

The abundance ratio is: Ar (0.93%); Ne (0.0018%); He (0.0005%); Kr (0.0001%); Xe (0.00001%); Rn much less.

830 (c)

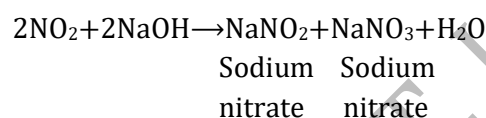


832 (a)

The solubility of alkaline earth metal fluorides decreases down the group.

833 (c)

Nitrogen dioxide (NO₂) exists as a dimer N₂O₄. When it is dissolved in sodium hydroxide or any other alkali, a mixture of nitrate and nitrite is obtained.



834 (c)

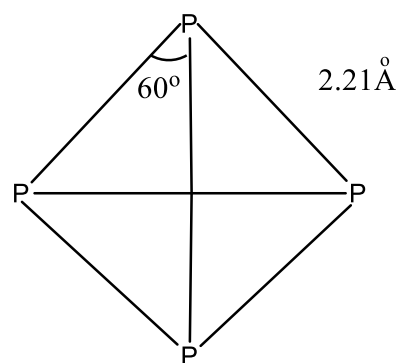
O atom in each has sp³-hybridisation. Due to increase in electronegativity of halogen from Br to F, the lone pair-bond pair repulsion causes decrease in bond angle.

835 (b)

XeF₄ has sp³d²-hybridization of Xe atom having two positions occupied by lone electrons.

836 (b)

White phosphorus has the molecular formula P₄ both in solid and vapour state at moderate temperature. The four atoms present in the molecule are arranged at the corners of tetrahedron so the ppp bond angle is 60°. At higher temperature (above 700°C) it dissociates to give diatomic molecules as



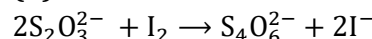
837 (d)

4P + 5O₂ → P₄O₁₀ + light. This phenomenon is called chemiluminescence

838 (c)

Oxidising agent such as NO₃⁻, SO₃²⁻ oxidise H₂S to give turbidity of S (colloidal) in water.

839 (d)



840 (b)

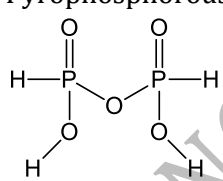
It is a fact.

- 841 (b)
 $P_2O_5 + 3H_2O \rightarrow 2H_3PO_4$
- 842 (c)
 Order of increasing enthalpy of vaporisation is $PH_3 < AsH_3 < NH_3$
 The enthalpy of NH_3 is higher due to the H-bonding.
- 843 (c)
 Lavoisier named it as muriatic acid. Cl_2 was named as oxymuriatic gas or acid.
- 844 (d)
 ZnO is amphoteric.
- 845 (c)
 $FeSO_4 + 2H_2O \rightarrow Fe(OH)_2 + H_2SO_4$; addition of H_2SO_4 to this solution reverses back the hydrolysis of $FeSO_4$.
- 846 (b)
 Because of very low ignition temperature (303 K) of phosphorus it is always kept under water
- 848 (b)
 $Cl_2O + H_2O \rightarrow 2HClO$; Cl has +1 oxidation state in Cl_2O and $HOCl$.
- 849 (b)
 $(NH_4)_2Cr_2O_7 \rightarrow N_2 + Cr_2O_3 + 4H_2O$
 (Green)
- 850 (a)
 SO_2 is a gas anhydride of H_2SO_3 ; P_2O_3 and P_2O_5 are solids.
- 851 (a)
 PCl_3 and cold water reacts to produce *ortho* phosphorus acid (phosphorus acid) H_3PO_3
 $PCl_3 + 3HOH \rightarrow H_3PO_3 + 3HCl$
- 853 (b)
 H_3PO_3 is dibasic acid forming NaH_2PO_3 and Na_2HPO_3
- 854 (c)
 It is a fact.
- 855 (d)
 Fluorine is the stronger oxidizing agent. It will oxidise other halide ions to halogens in solution or even dry
 $F_2 + 2X^- \rightarrow 2F^- + X_2$
- 856 (b)
 If 20 g N then wt. is 100.
 If 14 g N then wt. is $\frac{100 \times 14}{20} = 70$
 Atleast one N atom in one molecule should be present to give minimum mol. wt.
- 857 (d)
 Sulphides of As, Sb, Sn are soluble in yellow ammonium sulphide.
- 858 (a)
 Stronger is acid, weaker is its conjugate base. The acidic character (on the basis of bond length) of halogen acids is:
 $HF < HCl < HBr < HI$.
- 859 (c)

P_2O_3	A_2O_3	B_2O_3	Bi_2O_3
Acidic oxides			Alkaline
- 860 (b)
 $F_2 + 2HSO_4^- \rightarrow S_2O_8^{2-} + 2HF$
- 861 (c)
 Oleum is chemically $H_2S_2O_7$ (pyrosulphuric acid).
- 862 (b)
 Chlorine forms maximum (six) oxides.
- 863 (c)
 Ar is most abundant noble gas in air.
- 864 (a)
 It is a use of freons.
- 865 (d)
 S exists as octa-atomic in nature.
- 866 (d)
 Noble gases are adsorbed by coconut charcoal. the adsorption of different noble gases occur at different temperatures, hence charcoal is used to separate these gases.
 Helium is not adsorbed by charcoal (as it is very difficulty liquefiable gas).
- 867 (c)
 It is a reason for the given fact.
- 869 (d)
 Chloro-fluoro carbons are called freons.
- 870 (d)
 Analytical reagent grade H_2SO_4 has normality = 36 N.
- 872 (c)
 5 of P and 3 of Cl = 8.
- 873 (a)
 N_3H is hydrazoic acid. It easily gives a proton. Its salts are called azides (N_3^-).
- 875 (d)
 Ionisation energy increases along the period.
- 876 (c)
 K_2HgI_4 gives brown ppt. with NH_4^+ .
- 877 (c)
 NH_2CONH_2 is urea; 60 g urea has 28 g nitrogen.
- 878 (b)

- Phosphate mineral is phosphorite, $\text{Ca}_3(\text{PO}_4)_2$.
- 879 (a) S forms two thionic acids. Dithionic acid $\text{H}_2\text{S}_2\text{O}_6$ and polythionic acid $\text{H}_2\text{S}_n\text{O}_6$ ($n=3, 4, 5, 6$).
- 880 (b) The disease caused by the constant touch with white phosphorus is called phossy jaw
- 881 (c) PbSO_4 is insoluble in water and acids.
- 882 (c)
$$\begin{array}{c} \text{H}_2\text{S}_2\text{O}_3 \\ | \\ \text{O} \\ || \\ \text{HO} - \text{S} - \text{S} - \text{OH} \end{array}$$
- 883 (c) N atom on NH_3 has one lone pair of electrons on it for coordination.
- 884 (c) $2\text{KBr} + \text{Cl}_2 \rightarrow 2\text{KCl} + \text{Br}_2$
Hence, by the action of chlorine with KBr, bromine gas can be produced.
- 885 (c) The oxidation state of Xe in XeO_3 can be calculated as
 $\text{XeO}_3, x + (-2 \times 3) = 0$
 $X = +6$
 XeO_3 has sp^3 hybridisation with bond angle $= 103^\circ$.
- 886 (a)
$$\begin{array}{l} \text{NH}_4\text{NO}_3(s) \xrightarrow{\Delta} 2\text{H}_2\text{O} \uparrow + \text{N}_2\text{O} \uparrow \\ \text{NaNO}_3(s) \xrightarrow{\Delta} \text{NaNO}_2 + \text{O}_2 \uparrow \\ 2\text{AgNO}_3(s) \xrightarrow{\Delta} 2\text{Ag}(s) + 2\text{NO}_2(g) + \text{O}_2(g) \end{array}$$

Lunar caustic
 $2\text{Pb}(\text{NO}_3)_2 \rightarrow 2\text{PbO} + 4\text{NO}_2 \uparrow + \text{O}_2 \uparrow$
- 887 (b)
$$\begin{array}{l} \text{NH}_3 + \text{HCl} \rightarrow \text{NH}_4\text{Cl} \\ \text{PH}_3 + \text{HCl} \rightarrow \text{PH}_4\text{Cl} \end{array}$$
- 888 (a) POX_3 has sp^3 -hybridized, P having vacant d -orbitals. p -of O atom and d - of P undergoes $p\pi - d\pi$ bonding.
- 889 (d) Nitrochloroform $\text{CCl}_3 \cdot \text{NO}_2$ is called tear gas.
- 890 (d) All are the characteristics of $(\text{CN})_2$.
- 891 (c) Ammonium salts on heating with NaOH, give ammonia gas which has characteristic smell.
$$\text{NH}_4\text{Cl} + \text{NaOH} \xrightarrow{\Delta} \text{NH}_3 \uparrow + \text{H}_2\text{O} + \text{NaCl}$$

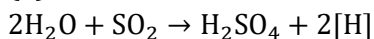
- 892 (b) $3\text{AgNO}_3 + \text{PH}_3 \rightarrow \text{Ag}_3\text{P} + 3\text{HNO}_3$
- 893 (c) $\text{H}_2\text{S}_2\text{O}_6 + \text{H}_2\text{O} \rightarrow \text{H}_2\text{SO}_4 + \text{H}_2\text{SO}_5$
- 894 (d) Ti has configuration $1s^2, 2s^2 2p^6, 3s^2 3p^6 3d^2, 4s^2$. Thus, Ti^{4+} has configuration $1s^2, 2s^2 2p^6, 3s^2 3p^6$, i.e., of Ar.
- 895 (b) It is a fact.
- 896 (d) Strongest oxidant is F_2 .
- 898 (c) Pyrophosphorous acid is $\text{H}_4\text{P}_2\text{O}_5$,

- 899 (b) A mixture of calcium cyanamide CaCN_2 and coke (C) is called nitrolim. It is used as fertilizer and can be prepared by passing nitrogen on CaC_2 .
$$\text{CaC}_2 + \text{N}_2 \xrightarrow{1100^\circ\text{C}} \text{CaCN}_2 + \text{C}$$

nitrolim
- 900 (d) NF_3 is not hydrolysed because neither N nor F has d -orbitals.
- 901 (d) When the mixture of noble gas is cooled in a coconut bulb at 173 K then Ar, Kr and Xe are adsorbed on charcoal while He and Ne are not adsorbed.
- 902 (a) $\text{H}_2\text{S} + \text{O}_3 \rightarrow \text{H}_2\text{O} + \text{O}_2 + \text{S}$
- 903 (a)
$$\text{PCl}_5 + \text{HO} - \text{S}(\text{OH})_2 \rightarrow \text{Cl} - \text{S}(\text{OH})_2 - \text{Cl} + \text{POCl}_3 + \text{H}_2\text{O}$$
- PCl_5 attacks $-\text{OH}$ group and replace it by $-\text{Cl}$ group. Hence, reaction of PCl_5 with H_2SO_4 shows the presence of two $-\text{OH}$ group in H_2SO_4 .
- 904 (a) Caliche is $\text{NaNO}_3 + \text{NaIO}_3$ (0.2%).
- 905 (a) O_2 molecule has total number of 16 electrons out of which two electrons are unpaired giving a paramagnetic nature while 14 electrons are paired

906 (b)

Follow text.

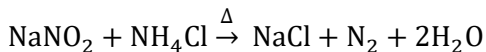
907 (a)



[nascent hydrogen]

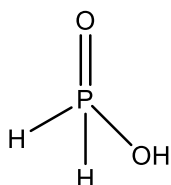
Coloured flower + 2[H] → Colourless flower

908 (a)



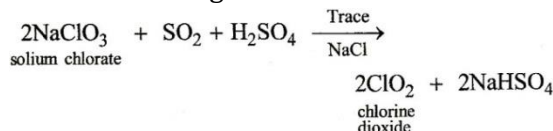
909 (a)

The formula of hypophosphorus acid is H_3PO_2 .



910 (b)

Commercially chlorine dioxide is prepared by passing SO_2 gas into a mixture of sodium chlorate and H_2SO_4 having NaCl in traces.



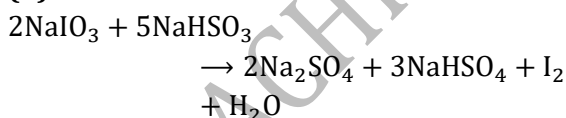
911 (b)

Oxygen due to its smaller size has more electron density in H_2O and thus, has more tendency to donate its lone pair for complex formation

912 (a)

Only He forms interstitial compounds since, the atomic size of He is smallest and matches the size of the interstices available in the lattice of most of the heavy metals

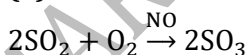
913 (b)



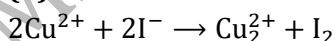
914 (d)

Na_2O_2 is peroxide.

915 (a)



916 (d)



917 (b)

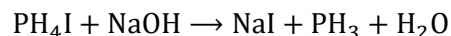
Both He and Na give yellow lines but of different wavelengths.

918 (b)

White phosphorus on reaction with limited supply of oxygen gives lower oxide P_4O_6 . Therefore, air ($\text{O}_2 + \text{N}_2$) is a good source for controlled supply of oxygen and the best choice for controlled oxidation of white phosphorus into

lower oxide P_4O_6 .

919 (a)



920 (d)

HF is formed which is liquid.

921 (a)

A characteristic of alkaline pyrogallol is to absorb (

922 (d)

Freons (chlorofluoro carbons) are used as refrigerant.

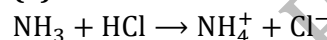
923 (b)

Red P does not react with NaOH.

924 (c)

N_2O , NO, N_2O_3 , N_2O_4 and N_2O_5 .

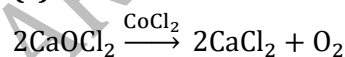
925 (a)



926 (b)

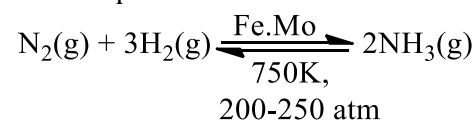
In household refrigeration, SO_2 is used as refrigerant. It is condensed by compression and cooling is caused when liquid SO_2 is allowed to evaporate.

927 (c)



928 (c)

When nitrogen and hydrogen in the ratio of 1:3 are mixed at high temperature (750 K) at 200-250 atm pressure and in the presence of Fe and Mo, ammonia is obtained. This process is called Haber's process.



In this process finely divided iron (Fe) acts as catalyst and molybdenum (Mo) acts as catalyst promoter.

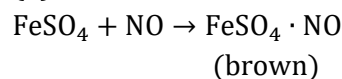
929 (d)

These are uses of F_2 .

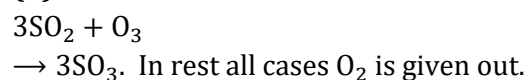
930 (b)

The spontaneous inflammability of phosphine with smoky rings (vortex rings) at the time of preparation is due to the presence of highly inflammable P_2H_4 . This property is used in Holme's signal.

931 (a)



932 (d)



933 (c)

- HClO₄ is strong acid:
 $\text{HClO}_4 + \text{H}_2\text{SO}_4 \rightarrow \text{ClO}_4^- + \text{H}_3\text{SO}_4^+$
- 934 (c)
 $\text{SO}_2 + 2\text{CuCl}_2 + 2\text{H}_2\text{O} \xrightarrow{\text{KCNS}} \text{Cu}_2\text{Cl}_2 + \text{H}_2\text{SO}_4 + 2\text{HCl}$
 White
- 935 (a)
 All ammonium salts on heating with any alkali give NH₃.
- 936 (d)
 $4\text{NH}_3 + 5\text{O}_2 \xrightarrow{\text{Pt gauze}} 4\text{NO} + 6\text{H}_2\text{O}$
- 937 (d)
 S₂Cl₂ is used in vulcanisation of rubber and as chlorinating agent.
- 938 (c)
 $\text{Ca}_3(\text{PO}_4)_2 + 2\text{H}_2\text{SO}_4 + 5\text{H}_2\text{O} \rightarrow \text{Ca}(\text{H}_2\text{PO}_4)_2 \cdot \text{H}_2\text{O} + 2\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$
- 939 (a)
 P₄O₁₀ and H₃PO₄ both have +5 oxidation state for P.
- 940 (a)
 H₂F₂ being weak acid is slightly ionized.
- 941 (c)
 Oleum is H₂S₂O₇.
- 942 (a)
 $\text{Cr} + \text{H}_2\text{SO}_4[\text{Cr}(\text{H}_2\text{O})_6^{2+}]\text{SO}_4$; Cr(H₂O)₆²⁺ is blue.
 Dil.
- 944 (d)
 SO₂ acts as bleaching agent due to its reducing property.
 $\text{SO}_2 + 2\text{H}_2\text{O} \rightarrow \text{H}_2\text{SO}_4 + 2\text{H}$
 Coloured matter + [H] → colourless matter.
- 945 (d)
 HClO₃ and ClO₃⁻ both possess these properties.
 $\text{ClO}_3^- \rightarrow \text{Cl}^- + \frac{3}{2}\text{O}_2$ oxidation and bleaching properties
- $$\left. \begin{array}{l} \text{Cl}^{5+} \rightarrow \text{Cl}^7 + 2e \\ 6e + \text{Cl}^{5+} \rightarrow \text{Cl}^- \end{array} \right\} \text{Disproportionation}$$
- 946 (c)
 Suppose the oxidation state of Xe in XeOF₂ is x
 $x + (-2) + 2(-1) = 0$
 $x - 2 - 2 = 0$
 $\Rightarrow x = +4$
- 947 (c)
 Only Mg and Mn liberate H₂ from dil. HNO₃.
- 948 (b)
 $2\text{AgClO}_3 + \text{Cl}_2 \rightarrow 2\text{AgCl} + \text{ClO}_2 + \text{O}_2$
- 949 (a)

- $2\text{FeCl}_3 + \text{SO}_2 + 2\text{H}_2\text{O} \rightarrow 2\text{FeCl}_2 + \text{H}_2\text{SO}_4 + 2\text{HCl}$
- 950 (c)
 KClO₃ is known as Berthelot's salt
- 951 (a)
 Pb reacts with dilute HNO₃ to produce NO
 $3\text{Pb} + 8\text{HNO}_3 \rightarrow 3\text{Pb}(\text{NO}_3)_2 + 2\text{NO} + 4\text{H}_2\text{O}$
 dil.
- 952 (d)
 Liquid NH₃; due to high heat of evaporation.
- 953 (c)
 (i) enantiotropy when two forms of a solid substance exist together in equilibrium with each other at a particular temperature under normal pressure e.g,
 $S_R \rightleftharpoons S_M$
 (ii) dynamic allotropy if different allotropic forms exist in equilibrium over a range of temperature.
 (iii) monotropy if an allotropic form change slowly to a stable form e.g.,
 $\text{O}_3 \rightarrow \text{O}_2$
 ∴ Monotropy is correct answer.
- 954 (c)
 These are facts.
- 955 (b)
 Xe reacts with P and O, the most electronegative elements.
- 956 (c)
 Azeotropic mixture of H₂SO₄ + H₂O contains 98.3% H₂SO₄.
- 957 (b)
 $2\text{CuSO}_4 + 4\text{KI} \rightarrow \text{Cu}_2\text{I}_2 + 2\text{K}_2\text{SO}_4 + \text{I}_2$
 $\text{I}_2 + 3\text{Na}_2\text{S}_2\text{O}_3 \rightarrow 2\text{Na}_2\text{S}_4\text{O}_6 + 2\text{NaI}$
- 958 (a)
 As a refrigerant.
- 959 (c)
 BiOCl is formed.
- 961 (a)
 10 g bleaching powder will produce 4.9 g
 $\text{Cl}_2 = \frac{4.9 \times 22.4}{71}$ litre Cl₂.
- 962 (c)
 In Ca(NO₃)₂; % of N = $\frac{20}{164} \times 100 = 17.07\%$
 In (NH₄)₂SO₄; % of N = $\frac{28}{132} \times 100 = 21.21\%$
 In NH₂CONH₂; % of N = $\frac{28}{60} \times 100 = 46.66\%$
 In NH₄NO₃; % of N = $\frac{28}{80} \times 100 = 35.00\%$
- 963 (a)
 $\text{NaClO} + \text{H}_2\text{O} \rightarrow \text{NaOH} + \text{HClO}$; the HClO is weakest acid among halogen oxo-acids and thus, pH is maximum.
- 964 (d)

- Anhydrous CaCl_2 can be used as dehydrating agent.
- 965 (c) It is a characteristic of XeF_6 :

$$2\text{XeF}_6 + \text{SiO}_2 \rightarrow 2\text{XeOF}_4 + \text{SiF}_4;$$

$$2\text{XeOF}_4 + \text{SiO}_2 \rightarrow 2\text{XeO}_2\text{F}_2 + \text{SiF}_4;$$

$$2\text{XeO}_2\text{F}_2 + \text{SiO}_2 \rightarrow 2\text{XeO}_3 + \text{SiF}_4.$$
- 966 (b) $4\text{K} + 3\text{SO}_2 \rightarrow \text{K}_2\text{SO}_3 + \text{K}_2\text{S}_2\text{O}_3$
- 971 (b) Arsenic purifier chamber in contact process possesses $\text{Fe}(\text{OH})_3$ which reacts with As_2SO_3 .
- 972 (a) H_2SO_4 is hygroscopic agent.
- 973 (d) Rest all react with water.
- 974 (c) The basic character of hydrides down the group.
- 975 (d) It is a fact.
- 976 (b) Cl is sp^3 -hybridized having electrons in d -orbitals and p -electrons of oxygen, gives rise to $p\pi-d\pi$ bonding to Cl—O bond.
- 977 (b) Arsenic acid is H_3AsO_4 .
- 978 (d) $\text{F} + e \rightarrow \text{F}^-$
 E_{RP}^0 is maximum for fluorine.
- 979 (b) SO_2 has sp^2 -hybridization with one lone pair on S atom having geometry.
-
- 980 (b) Phosphorus, element of nitrogen family(V group), produces maximum number of oxy acids.
 e.g., H_3PO_2 , HPO_2 , H_3PO_3 , $\text{H}_4\text{P}_2\text{O}_5$, HPO_3 , H_3PO_4 , $\text{H}_4\text{P}_2\text{O}_7$.
- 981 (d) Each member of gp. 17 possesses ns^2np^5 configuration.
- 982 (a) NOCl is nitrosyl chloride.
- 993 (d) PH_6^+ is not known.
- 994 (c) In a group, $\Delta G_f^\circ(\text{HX})$ changes from negative to positive downwards.
- 967 (d) It is an acid. $\text{HClO} \rightarrow \text{ClO}^- + \text{H}^+$.
- 968 (a) Nitrogen gas is major component of air.
- 969 (a) H_3PO_2 is monobasic acid and only one H is replaceable.
- 970 (a) It is a reason for the given fact.
- 983 (b) N is most electronegative among N-family.
- 984 (b) This is a reason for the given fact.
- 986 (c) F has more electronegativity than other halogens.
- 987 (b) On long standing it undergoes auto-oxidation as
 $6\text{CaOCl}_2 \rightarrow \text{Ca}(\text{ClO}_3)_2 + 5\text{CaCl}_2.$
- 988 (b) NH_3 is pyramidal.
- 989 (c) Hypophosphorus acid(H_3PO_2) is a monobasic acid and has only one ionisable H two H atoms are directly attached to phosphorus thus the correct statement is (c).
-
- 990 (d) Rest all form complex with NH_3 , e. g., $\text{Ag}(\text{NH}_3)_2^+$; $\text{Cu}(\text{NH}_3)_4^{2+}$; $\text{Cd}(\text{NH}_3)_4^{2+}$.
- 991 (c) In laboratory, H_2S is prepared by treating ferrous sulphide(black lumps) with dil. H_2SO_4
 $\text{FeS} + \text{H}_2\text{SO}_4 \rightarrow \text{FeSO}_4 + \text{H}_2\text{S}$
- 992 (c) ${}_1\text{H}^2 + {}_1\text{H}^2 \rightarrow {}_2\text{He}^4$
- $\text{HF}(\text{g})\Delta G = -273.20 \text{ kJ mol}^{-1}$
 $\text{HF}(\text{g})\Delta G = +1.72 \text{ kJ mol}^{-1}$
 Thus HF is thermally stable and HI not.

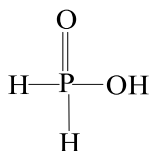
Thus, $\text{HF} > \text{HCl} > \text{HBr} > \text{HI}$.

995 (c)

Coconut charcoal possesses characteristic property for adsorbing different noble gases at different temperatures.

996 (d)

Hypophosphorus acid is monoprotic acid as only one H attached on O are ionisable.



997 (b)

It also exhibits +1 oxidation states like Cl, Br and I.

998 (d)

Metallic character increases down the group.

999 (a)

The reactivity of halogens decreases down the group.

100 (b)

0 It is a fact.

100 (a)

1 Clathrates are non-stoichiometric compounds where the ratio of guest and host molecules does not correspond to ideal chemical formula

100 (a)

2 Both possess pungent odour and act as bleaching agents.

100 (a)

3 It is a fact.

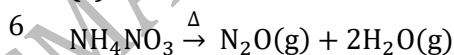
100 (d)

4 The metallic character is developed to a considerable extent in I_2 . It is violet crystalline, lustrous solid having the tendency to form I^{3+} cation.

100 (c)

5 Potassium chlorate (KClO_3) is known as Berthelot's salt. It is the salt of chlorine acid, HClO_3 .

100 (c)



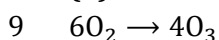
100 (b)



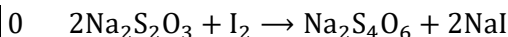
100 (c)

8 Simple representation of bleaching powder is CaOCl_2 . It is a mixture of $\text{Ca}(\text{OCl})_2 + \text{CaCl}_2 \cdot \text{Ca}(\text{OH})_2 \cdot \text{H}_2\text{O}$, i.e., calcium chlorohypochlorite.

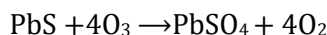
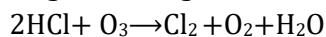
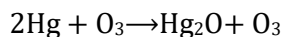
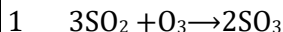
100 (b)



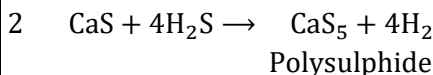
101 (c)



101 (c)



101 (c)

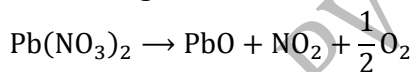


101 (c)

3 H_2SO_4 is oxidant and HI is strong reductant.

101 (d)

4 Decomposition involves breaking up of a molecule into its fragments.



101 (b)

5 Basic character of hydrides decreases down the group.

101 (a)

6 Fluorine forms Xe fluorides.

101 (a)

7 It is a fact.

101 (c)

8 Alkali metal oxides are saline oxides.

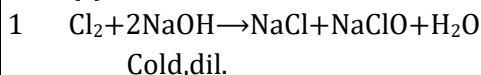
101 (a)

9 All are non-metals and possess strong electronegative nature.

102 (d)

0 N_2O_3 is blue coloured.

102 (c)



Chlorine reacts with cold and dilute NaOH to give sodium hypochlorite.

102 (a)

2 These are characteristics of H_2O .

102 (d)

3 In VA group the thermal stability of hydrides decreases from NH_3 to BiH_3 hence, BiH_3 is the most unstable hydride.



102 (b)

4 Both P^{3-} and Cl^- has $1s^2, 2s^2 2p^6, 3s^2 3p^6$ configuration.

102 (b)

5 Divers use $\text{He} + \text{O}_2$

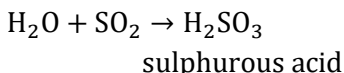
mixture for respiration in place of $\text{N}_2 + \text{O}_2$.

The N_2 was found to dissolve in blood at high pressure during diving and after it, the N_2 gas comes out from blood causing painful nerve

bursting. The mixture is also used for respiration by asthma patients.

102 (a)

6 SO_2 is soluble in water



102 (a)

7 Due to less reactivity of red phosphorus, it is used in the manufactures of safe matchsticks

102 (c)

8 It is a fact.

103 (d)

0 Due to absence of *d*-orbitals in N-atom, it cannot accept electrons from H_2O for hydrolysis of NF_3

103 (c)

1 It is a reason for the given fact.

103 (c)

2 General valence shell electronic configuration of 15 th group elements is $ns^2 np^3$ where n =period number.

103 (b)

3 K_2HgI_4 gives brown ppt. with NH_3 .

103 (b)

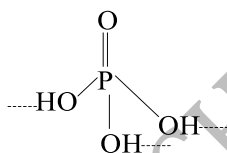
4 Except Bi, rest all VA members show allotropy.

103 (d)

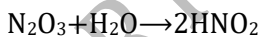
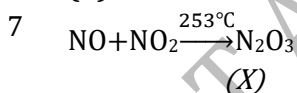
5 Pyrophosphoric acid is $\text{H}_4\text{P}_2\text{O}_7$ having 4H attached on 4 oxygen atoms.

103 (c)

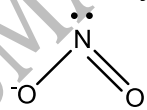
6 H_3PO_4 is syrupy liquid due to more sites available for H-bonding.



103 (b)



\therefore Anion of y is NO_2^-



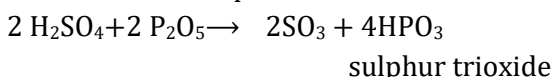
Its shape is triangular planar.

103 (d)

8 $\text{XeF}_2, \text{XeOF}_2, \text{XeF}_4, \text{XeOF}_4, \text{XeF}_6, \text{XeO}_3$

103 (a)

9 When conc. H_2SO_4 is heated with P_2O_5 , the acid is converted into sulphur trioxide.

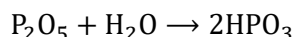


104 (b)

0 The reactivity of yellow or white phosphorus is maximum.

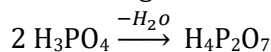
104 (b)

1 Metaphosphoric acid is HPO_3 ;

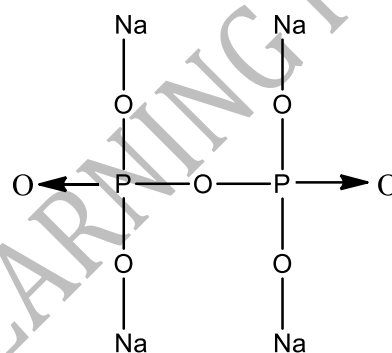


104 (c)

2 Sodium pyrophosphate is represented by $\text{Na}_4\text{P}_2\text{O}_7$. It is sodium salt of pyrophosphoric acid ($\text{H}_4\text{P}_2\text{O}_7$). Which may be considered to be made up by two molecules of *ortho* phosphoric acid eliminating one molecule of H_2O .

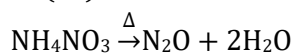
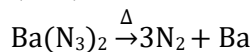
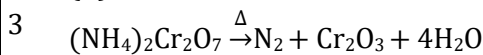


pyrophosphoric acid



sodium pyrophosphate

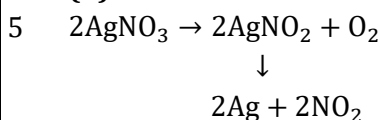
104 (d)



104 (b)

4 It is a fact.

104 (d)

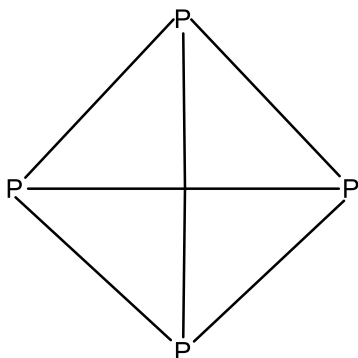


104 (c)

7 P_4O_{10} is a dehydrating agent.

104 (a)

8 \therefore Bonding electrons in white phosphorus = 6



Structure of white phosphorus

104 (b)

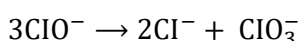
9 Compounds of Ar with fluorine are not known because of higher ionization energy of Ar.

105 (d)

0 SO_2 dissolves in H_2O in presence of oxygen to give H_2SO_4
 $2\text{SO}_2 + 2\text{H}_2\text{O} + \text{O}_2 \rightarrow 2\text{H}_2\text{SO}_4$
 H_2SO_4 or H_2SO_3 (solution of SO_2 in H_2O) reacts with marble to damage it as well as responsible for cough and choking in human body.

105 (b)

1 The hypochlorites disproportionate on heating as follows.



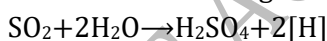
105 (d)

2 $\text{SiO}_2 + 4\text{HF} \rightarrow \text{SiF}_4 + 2\text{H}_2\text{O}$
 $\text{SiF}_4 + 2\text{HF} \rightarrow \text{H}_2\text{SiF}_6$

105 (b)

3 Cl_2 acts as permanent bleaching agent because its bleaching action is due to oxidation
 $\text{Cl}_2 + \text{H}_2\text{O} \rightarrow 2\text{HCl} + [\text{O}]$
 Organic colouring matter + $[\text{O}] \rightarrow$ colourless matter.

While SO_2 acts as temporary bleaching agent because its bleaching action is due to reduction.



Colouring matter + $2[\text{H}] \rightarrow$ colourless matter.

105 (b)

4 If not cooled properly, on opening the cork, the liquid will bump out.

105 (a)

5 $\text{CaC}_2 + \frac{5}{2}\text{O}_2 \rightarrow \text{CaO} + 2\text{CO}_2$
 $\text{CaC}_2 + \text{N}_2 \rightarrow \text{Ca}(\text{CN})_2$.

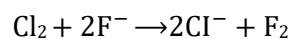
105 (c)

6 $\text{FeSO}_4 \cdot 7\text{H}_2\text{O} \xrightarrow{\Delta} \text{FeSO}_4 + 7\text{H}_2\text{O}$;
 $2\text{FeSO}_4 \xrightarrow{\Delta} \text{Fe}_2\text{O}_3 + \text{SO}_2 + \text{SO}_3$

105 (b)

7 With progressive increase in atomic number, the reduction potential of halogen decreases thus

oxidizing power also decreases. Hence a halogen with lower atomic number will oxidise the halide ion of higher atomic number and therefore will liberate them from their salt solution.



is not possible.

105 (d)

8 $\text{P}_4 + 6\text{H}_2\text{SO}_4 \rightarrow 4\text{H}_3\text{PO}_4 + 6\text{SO}_2$

105 (c)

9 ZnO reacts with acids and alkalies both.

106 (d)

0 Nitrogen in both N_2O_5 and HNO_3 possesses +5 oxidation state.

106 (b)

1 $\text{SiO}_2 + 6\text{HF} \rightarrow [\text{SiF}_6]^{2-} + 2\text{H}^+ + 2\text{H}_2\text{O}$

106 (d)

2 Rest all three properties are shown by white phosphorus.

106 (d)

3 $2\text{KMnO}_4 + 3\text{H}_2\text{SO}_4 + 10\text{HCl}$
 $\rightarrow \text{K}_2\text{SO}_4 + 2\text{MnSO}_4 + 8\text{H}_2\text{O}$
 $+ 5\text{Cl}_2$

106 (d)

4 This is a reason for the given fact.

106 (c)

5 Bi is metal.

106 (c)

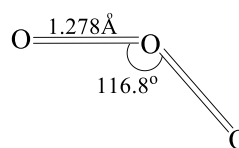
7 It is a method to get Cl_2 .

106 (a)

8 Acidic character of oxides increases along the period.

106 (b)

9 O_3 has no unpaired electron in its structure.



107 (d)

0 O_3 is used as dry bleaching agent.

107 (a)

1 The oxidizing power of HNO_3 is maximum among all.

107 (c)

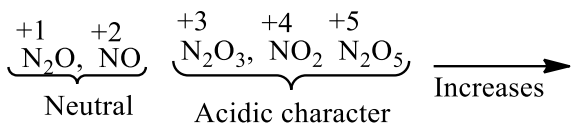
2 -3 in PH_3 and +5 in PCl_5 .

107 (b)

3 Sulphur exists as S_8 .

107 (b)

4 The acidic character of oxides increases with increase in the oxidation number of element.



107 (a)

5 Bleaching powder is CaOCl_2 having Ca^{2+} , Cl^- and

107 (a)

6 $\text{B} > \text{P} > \text{As} > \text{Bi}$

As we go down the group, bond angle decreases, since the repulsion between the bonded pairs of electrons decrease

107 (a)

7 $\text{CaOCl}_2 + \text{H}_2\text{O} \rightarrow \text{Ca(OH)}_2 + \text{HOCl} + \text{HCl}$

$\text{HOCl} \rightarrow \text{HCl} + [\text{O}]$

107 (b)

8 $\text{Ca}_3\text{P}_2 + 3\text{H}_2\text{O} \rightarrow 3\text{Ca(OH)}_2 + 2\text{PH}_3$

107 (a)

9 Due to highest IP, electrons are more tightly held with nucleus.

108 (c)

0 It is a fact.

108 (d)

1 $X = \text{I}_2, Y = \text{HI}$

$3\text{I}_2 + 2\text{NH}_3 \rightarrow \text{NH}_3 \cdot \text{NI}_3$

(explosive)

$8\text{NI}_3 \cdot \text{NH}_3 \rightarrow 5\text{N}_2 + \text{I}_2 + 6\text{NH}_4\text{I}$

$\text{I}_2 + \text{H}_2 \rightarrow 2\text{HI}$

(Y)

$3\text{NaI} + \text{H}_3\text{PO}_4 \xrightarrow{\Delta} \text{Na}_3\text{PO}_4 + 3\text{HI}$

108 (b)

2 V_2O_5 (vanadium pentoxide) is used as a catalyst in the manufacture of H_2SO_4 by contact process since, it is not easily poisoned.

108 (c)

4 (i) carbon monoxide is neutral and SO_3 is acidic. (ii) aluminium and zinc oxides are amphoteric, so aluminium and zinc oxides react with both as acid and base.

$\text{Al}_2\text{O}_3 + 6\text{HCl} \rightarrow 2\text{AlCl}_3 + 3\text{H}_2\text{O}$ (with acid)

$\text{Al}_2\text{O}_3 + 2\text{NaOH} + 3\text{H}_2\text{O} \rightarrow 2\text{NaAl(OH)}_4$ (with base)

$\text{ZnO} + \text{H}^+ \rightarrow \text{Zn}^{2+} + \text{H}_2\text{O}$ (in acid)

$\text{ZnO} + 2\text{OH}^- + \text{H}_2\text{O} \rightarrow [\text{Zn(OH)}_4]^{2-}$ (in base)

Hence, (i) and (iii) are correct.

108 (a)

5 It is a fact.

108 (d)

6 Among halides of hydrogen intermolecular H-bonding is present. So when we go top to bottom in halogen group, size of I^- ion increases and the intermolecular H-bonding becomes weak and easily gives H^+ in aqueous solution. So, it works as

a strong acid.

Acidity decreases in the order

$\text{HI} > \text{HBr} > \text{HCl} > \text{HF}$

108 (a)

7 Rest all gives O_2 on heating.

108 (a)

8 This was a reason for late discovery of F_2 .

108 (c)

9 H_2SO_5 (Caro's acid) and $\text{H}_2\text{S}_2\text{O}_8$ (Marshall's acid) contain one peroxyacids - O - O - linkage

109 (b)

0 F_2 is pale-yellow; Cl_2 is green-yellow; Br_2 is dark yellow-brown; I_2 is violet.

109 (c)

1 $(\text{CN})_2$ is called pseudohalogen.

109 (c)

2 $\text{CS}_2 + 3\text{Cl}_2 \xrightarrow{\text{I}_2} \text{CCl}_4 + \text{S}_2\text{Cl}_2$

109 (c)

4 $2\text{NaI} + 2\text{H}_2\text{SO}_4 \rightarrow \text{Na}_2\text{SO}_4 + \text{SO}_2 + \text{H}_2\text{O} + \text{I}_2$

109 (b)

5 $\text{KNO}_3 \xrightarrow{\Delta} \text{KNO}_2 + \frac{1}{2}\text{O}_2$

109 (b)

6 H_2SO_4 is a very good hygroscopic agent.

109 (c)

7 NO (Nitric oxide) is synthesized in lab by copper with cold and dilute HNO_3 .

$3\text{Cu} + 8\text{HNO}_3 \rightarrow 3\text{Cu(NO}_3)_2 + 2\text{NO} + 4\text{H}_2\text{O}$

dil.

Nitric oxide

109 (a)

8 XeO_4 is formed by promoting one 5s and there 5p-electrons of Xe to higher energy. 5d orbitals giving eight unpaired orbitals hybridize to give sp^3 hybridisation which form sigma bonds with four O atoms. The four unhybridised singly occupied 5d orbitals form four $p\pi - d\pi$ bonds with oxygen atoms

110 (c)

0 $2\text{KClO}_3 + 4\text{HCl} \rightarrow 2\text{KCl} + \text{Cl}_2 + 2\text{ClO}_2 + 2\text{H}_2\text{O}$

110 (a)

1 H-bonding in H_2O develops abnormal properties.

110 (b)

2 It is a fact.

110 (c)

3 It is a mixture of $\text{Ca(OCl)}_2 \cdot 4\text{H}_2\text{O}$

+ $\text{CaCl}_2\text{Ca(OH)}_2 \cdot \text{H}_2\text{O}$

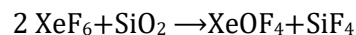
110 (d)

4 $\text{H}_2\text{S} + 2\text{HNO}_3 \rightarrow 2\text{NO}_2 + \text{S} + 2\text{H}_2\text{O}$

(colloidal sulphur)

110 (d)

- 5 It is a fact.
110 (c)
6 Alcoholic solution of I₂ is brown.
110 (d)
7 It is a use of Ne.
110 (b)
8 Fluorine exhibits an oxidation state of only -1 because it is very strongly electronegative element (maximum electronegativity in the periodic table)..
110 (a)
9 $2\text{Na}_2\text{SO}_3 + \text{O}_2 \rightarrow 2\text{Na}_2\text{SO}_4$
111 (d)
0 F₂ reacts with CH₄ even in dark to show substitution
111 (d)
1 NO₂ is brown gas and N₂O₃ is blue-coloured liquid.
111 (d)
2 $\text{H}_2\text{C}_2\text{O}_4 \xrightarrow{\text{H}_2\text{SO}_4} \text{H}_2\text{O} + \text{CO} + \text{CO}_2$
111 (c)
4 $\text{SO}_2 + \text{Cl}_2 \rightarrow \text{SO}_2\text{Cl}_2$
111 (d)
6 Perchloric acid is not a peroxy acid while perphosphoric acid, pernitric acid and perdisulphuric acid are the example of peroxy acid.
111 (a)
8 $2\text{NaI} + 2\text{H}_2\text{SO}_4 \rightarrow \text{Na}_2\text{SO}_4 + \text{I}_2 + \text{SO}_2 + 2\text{H}_2\text{O}$
111 (a)
9 Ozone undergoes addition reactions at C=C unsaturation.
112 (c)
0 $\text{NO}(\text{g}) + \text{NO}_2(\text{g}) \rightarrow \text{N}_2\text{O}_3(\text{l})$
112 (d)
1 $\text{P}_4 + 5\text{O}_2 \rightarrow \text{P}_4\text{O}_{10}$; white phosphorus gets easily oxidised because it is highly reactive
112 (a)
2 Red phosphorus is less reactive.
112 (b)
3 P forms tetra-atomic molecule.
112 (a)
4 $\text{H}_2\text{S} \rightleftharpoons \text{H}^+ + \text{HS}^-$
 $\text{HS}^- \rightleftharpoons \text{H}^+ + \text{S}^{2-}$
112 (c)
5 $\text{S} + \text{H}_2\text{O} + 3\text{O}_3 \rightarrow \text{H}_2\text{SO}_4 + 3\text{O}_2$
112 (d)
6 All show +5 covalency.
112 (c)
7 Xenon hexafluoride reacts with silica to form XeOF₄ as



The oxidations state of xenon in XeOF₄ is calculated as

$$x - 2 - 1$$



$$x + (-2) + 4 \times (-1) = 0$$

$$x - 2 - 4 = 0$$

$$x = +6$$

112 (d)

8 These are reasons for the given fact.

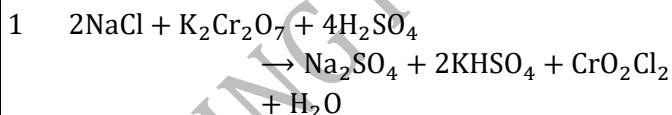
112 (c)

9 Halogen's *d*-orbital forms π -bonds with *p*-orbital of oxygen.

113 (a)

0 It is a fact.

113 (c)



113 (c)

2 Ozone is used for purifying water because ozone kills bacteria, cysts, mold, parasites, viruses, contaminates etc. It is one of the effective way of eliminating microorganism in the water. Ozone is most effective oxidant. It inactivates and oxidises organic matter, contaminates, pesticides, viruses and bacteria faster than chlorine. Ozone do not form TMH which have unpleasant odour and also carcinogenic. Ozone is very good biocide, ozone also absorbs UV radiation.

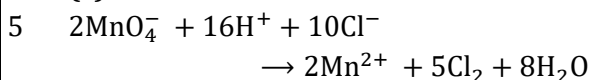
113 (d)

3 Due to N \equiv N bond.

113 (d)

4 In disproportionation reaction, compounds are simultaneously formed that contain a given element in a more oxidised and more reduced state than the initial one. ClO₄⁻ In oxidation number of Cl is +7 and it cannot increase further so ClO₄⁻ will not get oxidized and so will not undergo disproportionation reaction.

113 (c)



113 (d)

6 AsH₃ is gas.

113 (d)

7 P₄O₁₀ is tetrahedral in nature.

113 (b)

8 It is a reason for the given fact.

113 (d)

Cl₂O, ClO, ClO₂, Cl₂O₆, Cl₂O₇, ClO₄ are oxides of chl

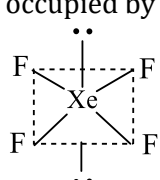
- 9
- 114 (d)
- 0 N_2O has neither oxidant nor reductant nature.
- 114 (d)
- 1 By Haber's process.
- 114 (a)
- 2 The basic character of halides of N is:
 $\text{NF}_3 < \text{NCl}_3 < \text{NBr}_3 < \text{NI}_3$.
- 114 (c)
- 3 H_2O_2 decolourises KMnO_4 but O_3 not.
- 114 (c)
- 4 $\text{Cl}_2 + 2\text{KBr} \rightarrow \text{Br}_2 + 2\text{KCl}$
- 114 (c)
- 5 It is a fact.
- 114 (d)
- 6 $\text{Ba}(\text{N}_3)_2 \rightarrow \text{Ba}(\text{s}) + 3\text{N}_2(\text{g})$
 Azide salt of barium can be obtained in purest form as well as the decomposition product contain solid Ba as by product alongwith gaseous nitrogen hence to additional step of separation is required.
 Other reaction are

$$\text{NH}_4\text{NO}_3 \xrightarrow{\text{Heat}} \text{N}_2\text{O} + 2\text{H}_2\text{O}$$

$$2\text{NH}_3 + 3\text{CuO} \xrightarrow{\text{Heat}} 3\text{Cu} + 3\text{H}_2\text{O} + \text{N}_2$$

$$(\text{NH}_4)_2\text{Cr}_2\text{O}_7 \xrightarrow{\text{Heat}} \text{Cr}_2\text{O}_3 + 4\text{H}_2\text{O} + \text{N}_2$$
- 114 (b)
- 7 I_2 + alcohol is tincture of iodine used as antiseptic.
- 114 (c)
- 8 $2\text{XeF}_6 + \text{SiO}_2 \rightarrow \text{SiF}_4 + 2\text{XeOF}_4$
- 114 (c)
- 9 I_2 possesses sublimation nature.
- 115 (c)
- 0 Electrolysis of MgCl_2 , NaCl , KCl in fused state gives Cl_2 as byproduct. Electrolysis of Al_2O_3 in fused state gives O_2 as byproduct.
- 115 (d)
- 1 Rest all reacts with H_2SO_4 .
- 115 (b)
- 2 $\text{NaNO}_3 + 8\text{H} \rightarrow \text{NaOH} + 2\text{H}_2\text{O} + \text{NH}_3$
 $\text{Zn} + 2\text{NaOH} \rightarrow \text{Na}_2\text{ZnO}_2 + 2\text{H}$
- 115 (b)
- 3 Phosphine forms vortex rings of P_2O_5 when it comes in contact of air. These rings are in the form of white smoke. They are used in making smoke screen in warfare.
- 115 (c)
- 4 These radioactive minerals have entrapped He atoms, produced from particle, which they give on

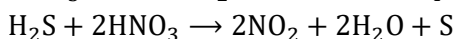
heating in **Vacuo**.

- 115 (b)
- 5 Rest all ($\text{ClO}_3 = 41$ electrons, $\text{ClO}_2 = 33$ electrons) have unpaired electrons.
- 115 (b)
- 6 SO_2 is acidic and KOH is basic.
- 115 (d)
- 7 $\text{SO}_2 + 2\text{H}_2\text{S} \rightarrow 2\text{H}_2\text{O} + 3\text{S}$; S^{2-} changes to S^0 .
- 115 (d)
- 8 In the reaction,
 $2\text{HNO}_3 + \text{P}_2\text{O}_5 \rightarrow 2\text{HPO}_3 + \text{N}_2\text{O}_5$
 HNO_3 does not behave as an oxidising agent because in this reaction P_2O_5 shows dehydrating property. It removes water molecule from HNO_3
- 115 (d)
- 9 A mixed salt is one which gives more than one type of cations or anions, e. g., $\text{Ca}^{2+} + \text{OCl}^- + \text{Cl}^-$
- 116 (a)
- 0 $4\text{FeS} + 7\text{O}_2 \rightarrow 2\text{Fe}_2\text{O}_3 + 4\text{SO}_2$
 $\text{SO}_2 + \text{H}_2\text{O} \rightarrow \text{H}_2\text{SO}_3$
 H_2SO_3 is dibasic acid.
- 116 (c)
- 1 $\text{NH}_3 + \text{H}_2\text{O} \rightarrow \text{NH}_4^+ + \text{OH}^-$
- 116 (d)
- 3 In the formation of XeF_4 , sp^3d^2 hybridisation occurs which gives the molecule an octahedral structure. The xenon and four fluorine atoms are coplanar while the two equatorial positions are occupied by the two lone pairs of electron
- 
- 116 (d)
- 4 N_2O and NO are neutral oxides of N.
- 116 (d)
- 5 -1 due to most electronegative nature and +3, +5, +7 due to excitation of p -electrons to d -orbitals; +1 also with less electronegative elements.
- 116 (c)
- 6 First two are simply methods of preparation of O_3 . Manufacture is done by (c) only.
- 116 (d)
- 7 $\text{P}_4 + \text{O}_2 \rightarrow \text{P}_4\text{O}_{10}$ or P_4O_6
- 116 (d)
- 8 Rest all are uses of He. He is heavier than H_2 .
- 116 (c)
- 9 It is a fact.
- 117 (b)
- 0 In N_2 and O_2 , Mg will react on heating with them

and welding is not possible.

117 (a)

1 HNO_3 oxidizes H_2S to colloidal sulphur.



117 (a)

2 $\text{CS}_2 + 2\text{Cl}_2 \rightarrow \text{CCl}_4 + 2\text{S}$

117 (a)

3 Each member of gp. 16 or VIA has ns^2np^4 configuration with two unpaired p -electrons.

117 (d)

4 Krypton is used in miner's cap lamps.

117 (b)

5 Solution of Br_2 in CS_2 is orange in colour.

117 (c)

6 On long standing it undergoes auto-oxidation as,
 $6\text{CaOCl}_2 \rightarrow \text{Ca}(\text{ClO}_3)_2 + 5\text{CaCl}_2$.

117 (d)

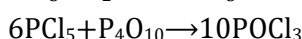
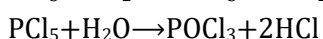
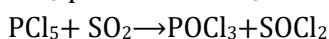
7 Ar is most abundant inert gas in air.

117 (a)

8 $\text{KF} + \text{HF} \rightarrow \text{KHF}_2$

117 (d)

9 PCl_5 produces POCl_3 with the following reagents



118 (b)

0 On hydration, energy is given out.

118 (b)

1 Polyanion formation is maximum in sulphur. this is due to the fact that sulphur shows maximum catenation in the group .

118 (c)

2 The solubility of noble gases increases with increase in mol. wt. due to increase in van der Waals' forces. However, these are sparingly soluble.

118 (a)

3 It is a fact.

118 (a)

4 Sulphur is found in following allotropic forms :
(a) monoclinic (b) rhombic (c) plastic

118 (c)

5 $\text{I}_2 + 10\text{HNO}_3 \rightarrow 2\text{HIO}_3 + 10\text{NO}_2 + 4\text{H}_2\text{O}$

118 (d)

6 All these adsorb inert gases.

118 (b)

7 Potassium tetraiodo mercurate (II) ie $\text{K}_2[\text{HgI}_4]$ dissolve in KOH solution to give Nessler's reagent. Nessler's reagent is used to test NH_4^+ ions.

118 (a)

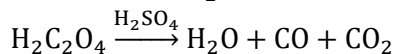
8 $\text{F}_2 + \text{H}_2\text{O} \rightarrow 2\text{HF} + \frac{1}{2}\text{O}_2$; $\Delta H = -ve$.

118 (a)

9 Pseudohalide ions combine together to form inter pseudohalogen compounds. Cl_2N_3 is not an inter pseudohalogen.

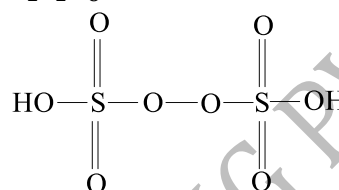
119 (a)

1 $\text{HCOOH} \xrightarrow{\text{H}_2\text{SO}_4} \text{H}_2\text{O} + \text{CO}$



119 (a)

2 $\text{H}_2\text{S}_2\text{O}_8$ has O—O bond in it.



119 (a)

4 ClF_3 , where Cl is sp^3d hybridised, has a T-shape structure due to presence of two lone pairs of electrons on Cl atom

119 (b)

5 $4\text{HCl} + \text{O}_2 \xrightarrow{\text{CuCl}_2} 2\text{H}_2\text{O} + 2\text{Cl}_2$ (Deacon's process).

119 (a)

6 Nitre cake is NaHSO_4 .

119 (a)

7 Helium(He) is a non-flammable (incombustible) gas and its lifting power is 93% as compared to flammable hydrogen gas, due to these reasons it is used in filling balloons and other lighter air - crafts.

119 (a)

8 It is a fact.

119 (d)

9 It is a reason for the given fact.

120 (a)

0 $\text{S}_2\text{O}_7 + \text{H}_2\text{O} \rightarrow \text{H}_2\text{S}_2\text{O}_8$

120 (b)

1 $\text{PI}_3 + 3\text{H}_2\text{O} \rightarrow \text{H}_3\text{PO}_3 + 3\text{HI}$
(Dibasic) (Monobasic)

120 (a)

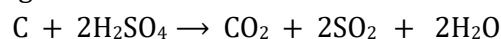
2 Rest all are poisonous hydrides.

120 (b)

4 S in SO_4^{2-} is sp^3 -hybridized.

120 (b)

5 Only carbon reacts with conc. H_2SO_4 to give two different gases



While other elements react with conc. H_2SO_4 with the evolution of only one type of gas.

120 (b)

6 O₃ is an allotrope of O₂.

120 (a)

7 Na₂SO₃ + S → Na₂S₂O₃

120 (d)

8 Each O and S has six valence electrons in it.

120 (b)

9 I atom in IF₇ possesses sp³d³-hybridisation to develop pentagonal bipyramidal shape.

121 (d)

0 $\overset{+7}{\text{HClO}_4} > \overset{+5}{\text{HClO}_3} > \overset{+3}{\text{HClO}_2} > \overset{+1}{\text{HClO}}$

As the oxidation number of halogen increases, acidic character increases

121 (b)

1 The 3 : 1 ratio of Cl³⁵: Cl³⁷ gives average at. wt. of 35.5 to chlorine.

121 (d)

2 Zero group is called as buffer group because it lies between highly electronegative halogens and highly electropositive alkali metal elements.

121 (a)

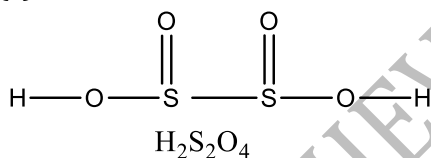
3 As the number of shells increases, size increases and the effective nuclear charge on the outermost electron decreases. Thus, IE decreases

121 (b)

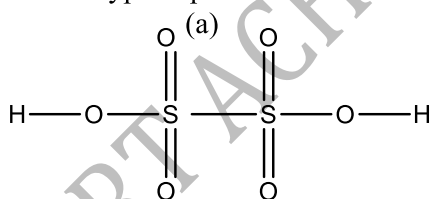
4 2Na₂S₂O₃ + I₂ → 2NaI + Na₂S₄O₆

121 (c)

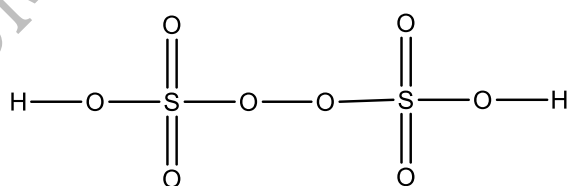
5



hyposulphurous acid



(b)
dithionic acid



(c)
Marshall's acid

.. Marshall's acid does not have s-s bond

121 (a)

6 Bromine is a liquid at room temperature

121 (b)

7 ⁸⁴Po is the only radioactive element of gp 16.

121 (c)

8 Oxygen and Sulphur are non-metals; Te is metalloid, Po is metal.

121 (c)

9 NH₃ > PH₃ > AsH₃ > SbH₃

On moving down the group atomic size increases and availability of lone pair decreases hence basic character decreases

122 (c)

0 H₂O contain hydrogen bond while no hydrogen bonding is present in H₂S

122 (c)

1 The acidic character decreases down the gp.

122 (d)

2 Rest all reacts with Cl₂.

122 (c)

3 Greater is electronegativity difference more is polarity. Electronegativities of N, Cl, O, F are 3.0, 3.0, 3.5 and 4.0 respectively.

122 (d)

4 $\text{Na} + \text{NH}_3 \rightarrow \text{NaNH}_2 + \frac{1}{2} \text{H}_2$

122 (c)

5 Bartlett prepared first compound of Xe as Xe⁺[PtF₆]⁻, a red orange crystalline solid.

$\text{Xe} + \text{PtF}_6 \rightarrow \text{Xe}^+[\text{PtF}_6]^-$

122 (d)

6 Oxidation number of S in H₂SO₃ is +4 which lies between minimum (-2) and maximum (+6) values and can thus increase or decrease.

122 (b)

7 The ease of liquefaction decreases with decrease in critical temperature. Also, critical temperature of a gas is lowered with increase in mol. mass.

122 (d)

8 Concentrated H₂SO₄ is less volatile, *ie*, it has high boiling point

122 (b)

9 $4\text{P} + 5\text{CO}_2 \rightarrow 2\text{P}_2\text{O}_5 + 5\text{C}$

123 (b)

0 Silica(SiO₂) is present in the glass. This silica reacts with hydrofluoric acid.

$\text{SiO}_2 + 4\text{HF} \rightarrow \text{SiF}_4 + 2\text{H}_2\text{O}$

$\text{SiF}_4 + 2\text{HF} \rightarrow \text{H}_2\text{SiF}_6$

fluorosilicic acid

Note: HF is used for the etching of glass.

123 (a)

1 The most reactive nature of F_2 brings it the name super halogen.

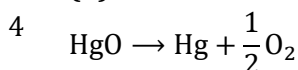
123 (b)

2 N_2O does not burn itself but supports combustion

123 (c)

3 Carbon cannot expand its octet due to absence of d -orbitals.

123 (b)



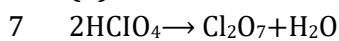
123 (b)

5 I_2 forms I_2O , I_2O_3 , I_2O_5 and I_2O_7 oxides.

123 (d)

6 Due to (i) Small atomic size (ii) High ionization energy (iii) Absence of d -orbital, helium does not form any compound

123 (b)



Hence, Cl_2O_7 is the anhydride of $HClO_4$

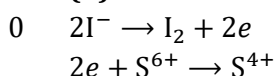
123 (c)

8 It is a fact.

123 (d)

9 Spirit of salt is a solution of HCl.

124 (d)

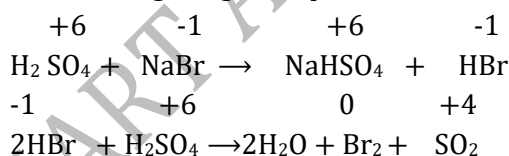


124 (c)

1 Oxygen shows only -2, -1 and +2 (in F_2O) oxidation states.

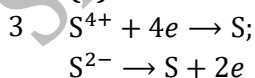
124 (d)

2 Concentrated sulphuric acid, being a strong acid, oxidises bromides and iodides but not chlorides and fluorides since, the later are more electronegative. Hence it can be reduced only by NaBr among the given options.



reduction

124 (a)



124 (d)

4 The great affinity of H_2SO_4 for water is because it forms hydrates with water

124 (d)

5 Usually electron affinities decreases on moving down a group but fluorine due to its smaller size

has a low value of electrons affinity in comparison to chlorine because the incoming electron experience greater repulsion. Thus, the order of electron affinity is as $Cl > F > Br > I$.

124 (a)

6 The correct order of acidity strength of halogen acids is $HF < HCl < HBr < HI$

This is due to the reason that as the size of halogen increases $H-X$ bond becomes weaker and thus, $H-X$ easily donate proton. Hence, HI is the strongest acid and HF is the weakest acid.

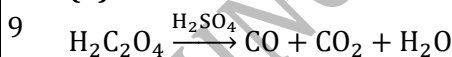
124 (a)

7 It is a fact.

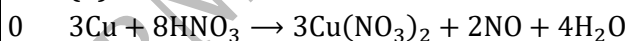
124 (b)

8 $NH_4NO_3 \rightarrow N_2O + 2H_2O$; N_2O does not burn and thus, does not supporter of combustion. Rest all nitrates give O_2 which is supporter of combustion.

124 (d)



125 (b)



125 (b)

1 M. p. order : $HCl < HBr < HF < HI$.
158 186 190 222K

125 (c)

2 Basic character (the tendency to donate lone pair) is maximum in NH_3 .

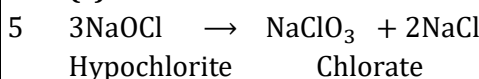
125 (a)

3 O_3 has no action with $KMnO_4$.

125 (d)

4 It is a method to obtain noble gases.

125 (c)



125 (b)

6 Chromite ion is $Cr_2O_4^{2-}$

125 (c)

7 Liquor ammonia bottles are opened only after cooling because it has high vapour pressure and it is mild explosive.

125 (a)

8 Hydride HF HCl HBr HI
B.pt(in K) 293 189 206 238

Because of having low boiling point HCl is more volatile

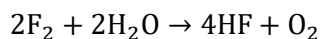
125 (b)

9 The energy liberated when an electron is added to an isolated gaseous atom is called electron affinity. Thus, as the size increase lesser energy is liberated and hence electron affinity decrease. But

the electron affinity of Cl is higher than the electron affinity of F although F has smaller size. This is because the incoming electron, in case of F experience a greater force of repulsion from the outer electrons of F. Thus to overcome the repulsion some released energy is utilized. Hence lesser energy is released. Thus the electron affinity is highest for Cl.

126 (a)

0 Fluorine reacts with water liberating O₂ exothermally



126 (c)

2 $Ca_3P_2 + 6H_2O \rightarrow 3Ca(OH)_2 + 2PH_3$

126 (d)

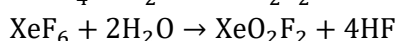
3 P exists as P₄.

126 (a)

4 Aqua-regia is the mixture of 3 part conc. HCl and 1 part conc. HNO₃. It is a very strong acid which can dissolve noble metals.

126 (c)

5 $XeOF_4 + H_2O \rightarrow XeO_2F_2 + 2HF$



126 (c)

6 It is a reason for the given fact.

126 (b)

7 $COOH + Conc.H_2SO_4 \rightarrow CO + CO_2 + H_2O$

|

COOH

Oxalic acid

Concentrated H₂SO₄ is a strong dehydrating agent.

126 (a)

8 O¹⁶ is the most abundant isotope of oxygen.

127 (b)

9 On passing H₂S through an oxidant, colloidal Sulphur is formed.

128 (a)

0 SO₂ is anhydride of H₂SO₃.

128 (a)

1 It is a fact.

128 (d)

2 It is a fact.

128 (c)

3 White phosphorus is soluble in CS₂ but red P is not.

128 (c)

4 The bond angles are 92°, 106°51', 109°28' and 120°

128 (d)

5 In solid state PCl₅ is ionic having PCl₄⁺ and PCl₆⁻ ions.

128 (d)

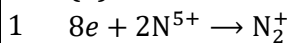
126 (b)

9 Ramsay found it during decay of radio isotopes.

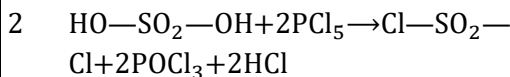
127 (c)

0 Group 15 members are called pnictogens, a collective name for this family.

127 (b)

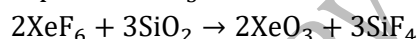


127 (b)



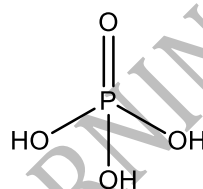
127 (b)

3 XeF₆ cannot be stored in glass vessels because it reacts with SiO₂ of the glass to give highly explosive XeO₃

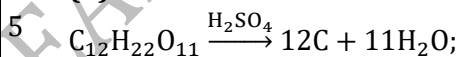


127 (b)

4 H₃PO₄ is tribasic acid.



127 (d)



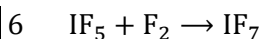
The process is called charring.

127 (a)

6 In case of fluorides and chlorides, HF and HCl gases are given out on heating with conc. H₂SO₄ and MnO₂. In bromides and iodides Br₂ and I₂ are given out.

127 (d)

8 All these tests are used to detect the presence of H₂S.



128 (c)

7 NH₃ is polar as well as base and thus, soluble in water.

128 (c)

8 IPO₄ is an ionic compound (I³⁺ PO₄³⁻).

128 (b)

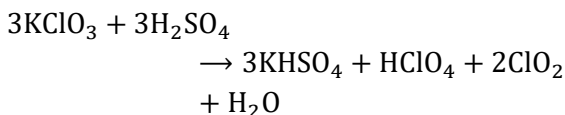
9 ClO₃⁻ has sp³-hybridization.

129 (d)

0 HI being least stable decomposes with time to yield H₂ + I₂. The I₂ is dissolved in HI to develop brown colour in solution.

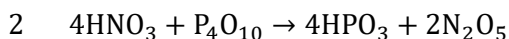
129 (d)

1



The reaction occurs with explosion.

129 (b)



129 (c)

3 F – F more strong bond compare to F – Cl, F – Br and Cl – Br bond

129 (d)

5 When molten sulphur is suddenly cooled by pouring into water it converts into plastic form

129 (b)

6 Rest all react with H_2SO_4 to give H_2 .

129 (c)

7 The oxides are CO_2 , H_2O and SO_2 respectively.

129 (c)

8 N_2 and O_2 present in air are allowed to react to form NO and then NO_2 .

129 (b)

9 Both SO_3 and H_2SO_4 have Sulphur in + 6 oxidation state.

130 (c)

0 It is a fact.

130 (c)

1 $1s^2 2s^2 2p^6 \rightarrow$ Neon
It is noble gas

130 (a)

2 F does not have d-orbital in 2nd shell.

130 (d)

3 A commercial method to prepare O_2 .

130 (c)

4 N_2 is not supporter of life.

130 (b)

5 Hg reacts with O_3 to form HgO which sticks on walls.

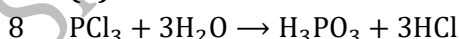
130 (b)

6 He has $1s^2$ configuration.

130 (a)

7 SCl_4 has sp^3d – hybridization and possesses see-saw structure.

130 (b)



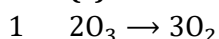
130 (a)

9 N_2O_5 is acidic. NaOH an alkali, can absorb acidic ox

131 (b)

0 Notice that electron affinity of Cl is more than F.

131 (c)



131 (d)

None of these react directly with halogens (Cl_2 , Br_2

2

131 (c)

3 Oleum is $\text{H}_2\text{S}_2\text{O}_4 + \text{SO}_3$.

131 (a)

4 N_2 forms NCl_3 , while P can form both PCl_3 and PCl_5 nitrogen does not give a pentahalide due to the non availability of 2d-orbital, whereas p has low lying 3d-orbital which can be used for bonding.

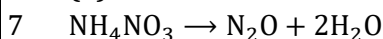
131 (b)

5 $(\text{CN})_2$ is known as pseudohalogen

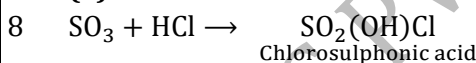
131 (a)

6 B.p. and m.p. decrease with decrease in mol. wt.

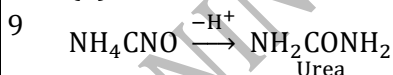
131 (a)



131 (a)



131 (b)



132 (b)

0 Salts of HClO_2 (ClO_2^- is chlorite) are called chlorite.

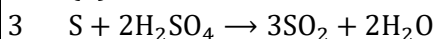
132 (a)

1 He gas is not adsorbed by coconut charcoal.

132 (d)

2 PbS is black which is oxidized to PbSO_4 by ozone.

132 (b)



132 (d)

4 CO_2 gets evaporated slowly.

132 (b)

5 The order of bond dissociation energy of hydrogen halide (or halogen acid) is as
Hydrogen halide dissociation $\text{HF} > \text{HCl} > \text{HBr} > \text{HI}$

Bond dissociation

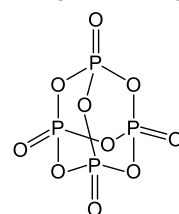
Energy KJ mol^{-1} 566 431 366 299

Bond dissociation energy \propto heat of formation

As bond dissociation energy decreases the heat of formation of halogen acids also decreases. Hence, the order of heat of formation of halogen acids is $\text{HF} > \text{HCl} > \text{HBr} > \text{HI}$

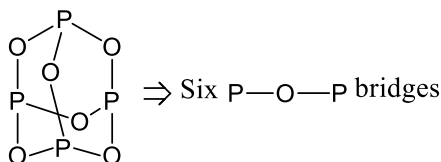
132 (d)

6 P_2O_5 , ie, P_4O_{10}



\Rightarrow Six P—O—P bridges

P_2O_3 ie, P_4O_6



132 (d)

7 S_R and S_M are allotropic forms of Sulphur.

132 (d)

8 Copper turing on heating with conc. H_2SO_4 produce SO_2 .



132 (c)

9 Option(c) has noble gas configuration as it has 8 electrons in valence shell.

133 (d)

0 The acidity of oxyacids of halogens increases with increase in oxidation state of halogen.

Oxidation state of Cl in $HClO = +1$

Oxidation state of Cl in $HClO_2 = +3$

Oxidation state of Cl in $HClO_3 = +5$

Oxidation state of Cl in $HClO_4 = +7$

Hence, $HClO_4$ has highest acidity among oxyacids of chlorine.

133 (a)

1 $LiF > LiCl > LiBr > LiI$ (Lattice energy)

133 (d)

2 Iodine readily dissolves in potassium iodide

133 (c)

7 NH_4Cl has sublimation nature, *i. e.*, tendency to convert directly into vapour state from solid state.

133 (b)

8 $NH_3 + HCl \rightarrow NH_4Cl$ (White fumes)

133 (b)

9 $PtCl_4 \rightarrow PtCl_2 + Cl_2$

134 (b)

0 Liquid ammonia helps in cooling of things due to its high heat of vaporisation. Therefore, it is used in refrigeration.

134 (a)

1 As stabilizer.

134 (b)

2 Bi does not show allotropy while, the allotropes of other elements are as follows

N → α and β nitrogen

As → Yellow and Grey forms

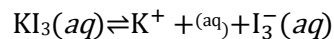
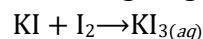
P → White, Red and Black forms

Sb → Yellow and Grey forms

134 (d)

3 In electrothermal process silica is heated with calcium phosphate when phosphorus pentoxide is obtained. It is then reduced by coke in electric

solution giving KI_3 .



Note: I_2 is more soluble in an aqueous solution of KI than in pure water, it is due to the formation of polyhalide (I_3^- ion).

133 (c)

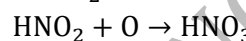
3 SO_3 is colourless, crystalline transparent solid at room temperature.

133 (d)

4 H_2O containing H-bond due to which it have highest boiling point

133 (c)

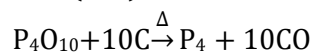
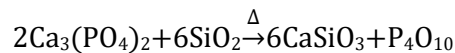
5 HNO_2 can be either reduced to nitric acid (NO) or oxidised to nitric acid and hence it acts both as an oxidising as well as reducing agent



133 (d)

6 NCl_3 has sp^3 -hybridized N atom.

furnace to get white phosphorus.



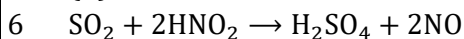
134 (c)

4 It is a reason for the given fact.

134 (a)

5 NH_3 is a molecular hydride.

134 (d)



134 (a)

7 Reducing properties increase from F to I so, it oxidise by nitric acid



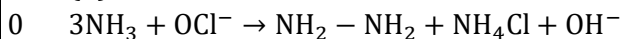
134 (a)

8 Alkali metal oxides are most basic.

134 (b)

9 The acidic character of oxo-acids decreases down the gp.

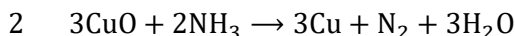
135 (b)



135 (a)

1 PO_2 and NCl_5 cannot exist

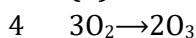
135 (a)



135 (b)

3 It is a fact.

135 (d)



$$3\text{vol O}_2 = 2\text{vol O}_3$$

$$x \text{ vol O}_2 = \frac{2}{3} x \text{ vol O}_3$$

$$x + \frac{2}{3}x = 100\text{L}$$

$$\frac{5}{3}x = 100 \text{ or } x = 60\text{L O}_2$$

$$\text{Volume of O}_3 = \frac{2}{3} \times 60 = 40\text{L}$$

135 (b)

5 The correct order of occurrence in air is

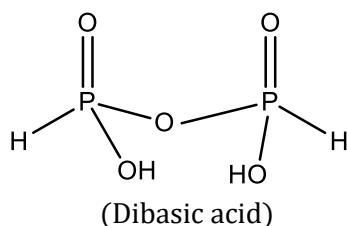


135 (b)

6 Most of the noble gases are obtained from air.

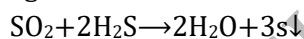
135 (a)

7 In pyrophosphorous acid p is in +3 oxidation state.



135 (a)

8 In the reaction SO_2 and H_2S , SO_2 acts as oxidizing agent and H_2S acts as reducing agent.



136 (b)

9 Marshall's acid is the name for $\text{H}_2\text{S}_2\text{O}_8$ or perdisulphuric acid.

137 (a)

0 Neon is Greek language signifies 'new'.

137 (a)

1 Due to one unpaired electron in it.

137 (a)



137 (b)

3 Nitric acid oxidises iodine into iodic acid (HIO_3).



Iodic acid

137 (b)

4 B.p. of molecules increases with increase in mol. wt. NH_3 however shows H-bonding and has high b.p.

135 (d)

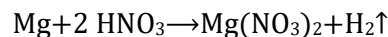
9 HBr is strong reducing agent and will be oxidized to

136 (b)

0 About 46% N is present in urea.

136 (c)

1 Magnesium and dilute HNO_3 reacts to produce H_2 gas.



136 (d)

3 In HF , the molecules aggregate because of intermolecular hydrogen bonding. Hence, it has highest boiling point

136 (a)

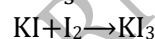
4 HF is a weak acid due to intermolecular hydrogen bonding

136 (c)

5 Rest all are uses of chlorine.

136 (b)

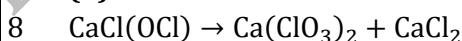
6 The solubility of I_2 in water increase by the addition of KI due to formation of polyhalide ion, i.e. I_3^- .



136 (d)

7 Platinum, palladium and iridium are not attacked by strong acids. So these are called noble metals.

136 (b)



137 (a)

5 S, Se and Te are typically tetravalent in their compounds with oxygen. They show +6 oxidation state in fluorides.

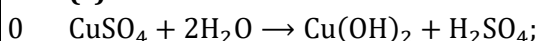
137 (c)

7 It is a fact.

137 (d)

9 These are the uses of liquid oxygen.

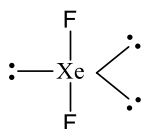
138 (c)



Addition of CH_3COOH reverses the hydrolysis of CuSO_4 .

138 (d)

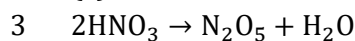
1 XeF_2 has sp^3d hybridization with linear shape



138 (a)

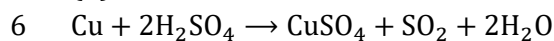
2 I₂ is more soluble in C₆H₆ than in water.

138 (c)

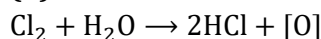


Nitric acid

138 (b)



138 (d)



139 (d)

1 Xe in XeF₄, XeF₆, XeO₃ and XeO₄ possess sp³d², sp³d³, sp³ and sp³-hybridisation respectively.

139 (c)

2 Polonium, the last member of oxygen family is radioactive

139 (c)

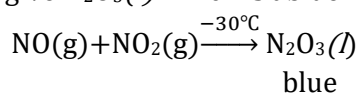
3 In cold solution S passes in colloidal state.

139 (d)

4 XeO₃ + 6HF → XeF₆ + 3H₂O is not possible because F⁻ is strong reducing agent and XeO₃ is strong oxidant. However the reverse reaction occurs XeF₆ + 3H₂O → XeO₃ + 6HF

139 (b)

5 Equimolar amounts of NO(g) and NO₂(g) at -30°C give N₂O₃(l) which is a blue liquid.



139 (b)

6 Fluorine is the most electronegative element in Periodic Table

139 (c)

7 NH₃ reacts with rest of all.

139 (b)

8 NH₃ has one lone pair of electrons. Rest all two lone pairs on central atom. The angle contracts due to lone pair effect.

139 (c)

9 As the oxidation number of central atom in oxoacids increases, acidic nature increases.

140 (a)

0 The bond angles and stability in hydrides decrease from N to Sb due to decreasing electronegativity of central atom.

140 (d)



140 (a)

7

138 (d)

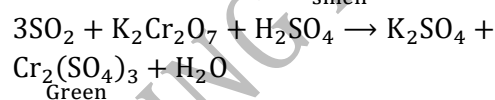
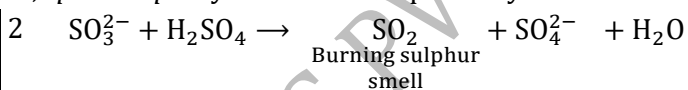
8 HNO₃ is strong oxidant and oxidizes these all.

138 (a)

9 White phosphorus exists as P₄ units where, four P atoms lie at the corners of a regular tetrahedron with P – P – P = 60°

139 (d)

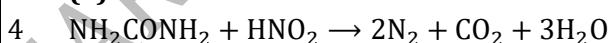
0 All were difficulties in isolation of F₂.



140 (b)

3 NO₂ is pungent smelling gas.

140 (a)



140 (a)

5 The —O—O— linkage is called peroxide linkage.

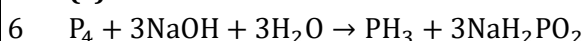
Except for PbO₂, all the given choices have —O—O— linkage because all are peroxide.

H₂O₂ → hydrogen peroxide

BaO₂ → barium peroxide

SeO₂ → selenium peroxide

140 (c)



140 (c)

7 Rest all react with AgCl.

140 (d)

8 It is a reason for the given fact.

140 (a)

9 F₂ + $\frac{1}{2}$ O₂ → F₂O is endothermic in nature and F₂ is reduced here, O₂ is oxidized. In (b) Cl₂ is oxidised. In (c) no doubt F₂ is reduced but it is exothermic reaction.

141 (c)

