

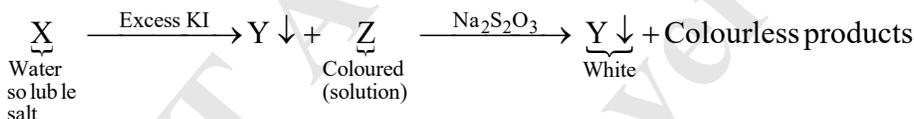
Single correct :

- Q.1 Cl_2 can disproportionate in
 (A) NaOH, HF (B) K_2MnO_4 , NaOH (C) K_2MnO_4 , HF (D) $\text{Ca}(\text{OH})_2$, H_2O
- Q.2 Which of the following cation is paramagnetic ?
 (A) La^{3+} (B) Lu^{3+} (C) Ce^{4+} (D) Nd^{3+}
- Q.3 Potassium sulphite solution was mixed potassium hydroxide & the potassium permanganate solution was added into it, then final colour of the solution is
 (A) Blue (B) Colourless (C) Light Pink (D) Green
- Q.4 Which is correct reaction of lanthanoid (Ln) ?
 (A) $\text{Ln} + \text{O}_2 \rightarrow \text{LnO}_2$ (B) $\text{Ln} + \text{H}_2\text{O} \rightarrow \text{LnH}_3 + \text{Ln}(\text{OH})_3$
 (C) $\text{Ln} + \text{dil. HCl} \rightarrow \text{LnCl}_3 + \text{H}_2 \uparrow$ (D) $\text{Ln} + \text{N}_2 \rightarrow \text{LnN}_3$
- Q.5 Which pair of species comproportionate in acidic medium.
 (A) KMnO_4 , Mn^{2+} (B) NO_3^- , NO (C) Cl^- , OCl^- (D) $\text{K}_2\text{Cr}_2\text{O}_7$, Cr^{3+}
- Q.6 Which of the following pair of salts is water insoluble but both are soluble in excess of hypo solution ?
 (A) $\text{Fe}_2(\text{SO}_4)_3 \cdot \text{BaCO}_3$ (B) AgI, Ag_2CO_3
 (C) CuSO_4 , HgI_2 (D) $\text{Fe}(\text{OH})_2$, Ag_2S
- Q.7 Cu^{2+} (aq) does **not** undergo redox reaction with solution of
 (A) $(\text{NH}_4)_2\text{S}$ (B) $\text{Na}_2\text{S}_2\text{O}_3$ (C) KCN (D) NH_4SCN
- Q.8 **Incorrect** statement is
 (A) Cr^{2+} (aq) has strong reducing character
 (B) Mn^{3+} (aq) has strong oxidizing character
 (C) Co^{2+} (aq) is stable but it is easily oxidized in presence of complexing reagent.
 (D) CuCl undergoes disproportionation in excess of water
- Q.9 HCl is **not** used to make the medium acidic in reactions of KMnO_4 , because
 (A) KMnO_4 does not play role of self indicator
 (B) KMnO_4 is a weaker oxidising agent than HCl
 (C) Both HCl and KMnO_4 act as oxidising agent
 (D) KMnO_4 oxidises HCl into Cl_2 which is also an oxidising agent
- Q.10 $\text{KMnO}_4 + \text{NaOH} \xrightarrow{\Delta} \text{Green solution} \xrightarrow{\text{excess water}} \text{purple colour along with black residue.}$
 (Purple) (Hot conc.)
- Which of the following statement is/are correct regarding above information ?
 (A) The oxidation state of Mn in green solution is +6
 (B) Both steps take place through redox reaction
 (C) MnO_2 is obtained in the form of black residue
 (D) All of these

- Q.11 When KMnO_4 separately reacts with H_2O_2 in weakly alkaline medium and acidic medium, then products of KMnO_4 are respectively ?
 (A) K_2MnO_4 and $\text{Mn}^{2+}(\text{aq})$ (B) MnO_2 and MnO_2
 (C) MnO_2 and $\text{Mn}^{2+}(\text{aq})$ (D) $\text{Mn}^{2+}(\text{aq})$ and MnO_2
- Q.12 In which of the following reactions K_2MnO_4 is **not** formed ?
 (A) $\text{KMnO}_4(\text{s}) \xrightarrow{\Delta}$ (B) $\text{MnO}_2 + 2\text{KOH} + \text{KNO}_3 \xrightarrow{\Delta}$
 (C) $3\text{MnO}_2 + 6\text{KOH} + \text{KClO}_3 \xrightarrow{\Delta}$ (D) $2\text{KMnO}_4 + \text{KI} + \text{H}_2\text{O} \longrightarrow$
- Q.13 Which oxide exhibits strongest oxidizing character among given oxides ?
 (A) CrO_3 (B) MoO_3 (C) WO_3 (D) Mn_2O_7
- Q.14 When solution of potassium permanganate is run from a burette into a flask containing aqueous solution of oxalic acid and dilute sulphuric acid, the rate of reaction suddenly increases considerably as more potassium permanganate is added. The correct reason for this observation is
 (A) Reaction is catalysed by $\text{Mn}^{2+}(\text{aq})$ ions produced in the reaction
 (B) pH of solution in the flask increases
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Comprehension

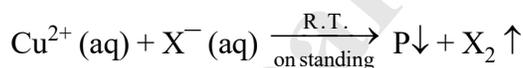
Comprehension (Q.15 to Q.16)



- Q.15 Salt 'X' is
 (A) $\text{Fe}_2(\text{SO}_4)_3$ (B) $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ (C) KNO_2 (D) $\text{Hg}(\text{NO}_3)_2$
- Q.16 Salt 'X' does not produce precipitate with solution of
 (A) $\text{K}_4[\text{Fe}(\text{CN})_6]$ (B) BaCl_2 (C) NaOH (D) Excess NH_4OH

More than one may be correct

- Q.17 For reaction :



$\text{X}^{-}(\text{aq})$ can be

- (A) $\text{SCN}^{-}(\text{aq})$ (B) $\text{CN}^{-}(\text{aq})$ (C) $\text{I}^{-}(\text{aq})$ (D) $\text{S}_2\text{O}_3^{2-}(\text{aq})$
- Q.18 Consider the following reactions
 $\text{P} + \text{Q} \longrightarrow \text{R} + \text{K}_2\text{SO}_4$
 $\text{R} \longrightarrow 2\text{CuI} + \text{I}_2$
 $\text{Ag}^{+} + \text{Q} \longrightarrow \text{S} + \text{K}^{+}$
 Then according to given information the correct match is
 (A) $\text{P} = \text{CuSO}_4$ (B) $\text{Q} = \text{KI}$ (C) $\text{R} = \text{CuI}_2$ (D) $\text{S} = \text{AgI}$

- Q.19 Chemical behaviour of excess of hypo solution towards Ag^+ (aq) is same as with :
 (A) Hg^{2+} (aq) (B) Cu^{2+} (aq) (C) Pb^{2+} (aq) (D) Bi^{3+} (aq)
- Q.20 Fe^{3+} (aq) undergoes redox reaction with solution of
 (A) SO_2 (B) NH_4SCN (C) KI (D) $\text{Na}_2\text{S}_2\text{O}_3$
- Q.21 $\text{K}_2\text{Cr}_2\text{O}_7(\text{s}) \xrightarrow{\Delta} \text{A} + \text{B} + \text{C}(\text{g})$
 If 'A' forms precipitate with $\text{Ba}(\text{OH})_2$, then correct statement(s) for given reaction and products is/are
 (A) Gas 'C' is also formed when solid $\text{K}_2\text{Cr}_2\text{O}_7$ is warmed with conc. H_2SO_4
 (B) Compound 'A' is also formed when 'B' is warmed with solution of Br_2 in KOH
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- Q.22 Aqueous solution of which of the following compound(s) is acidic ?
 (A) HgCl_2 (B) MnO_2 (C) VCl_5 (D) FeCl_3
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 (A) $\text{Fe}_2\text{O}_3, \text{Al}_2\text{O}_3$ (B) CuO, ZnO (C) $\text{MnO}_2, \text{Cr}_2\text{O}_3$ (D) $\text{PbO}, \text{Na}_2\text{O}$
- Q.25 KMnO_4 , which is used as laboratory reactant can be prepared by :
 (A) Electrolytic oxidation of K_2MnO_4 in alkaline medium
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Subjective

- Q.27 Find total number of properties which are changed when transition metal form interstitial carbide among given properties.
 Ductility, Malleability, Density, Hardness, Solidstate structure,
 Electrical conductivity, Number of free electrons, physical state.
- Q.28 Find out number of ions which absorbs wavelength (x) in aqueous medium.
 Where range of wavelength x is [yellow colour \leq x \leq red colour].
 $\text{Fe}^{2+}, \text{Fe}^{3+}, \text{Cr}^{3+}, \text{Cu}^{2+}, \text{Ni}^{2+}, \text{Zn}^{2+}, \text{Sc}^{3+}, \text{Ba}^{2+}, \text{Ti}^{3+}, \text{V}^{4+}$

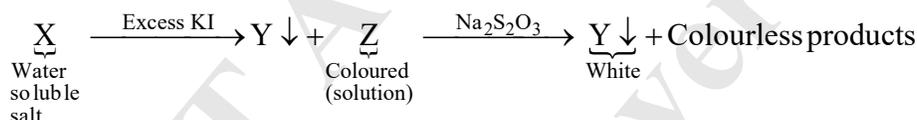
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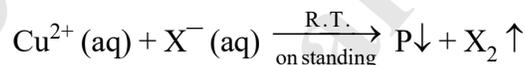
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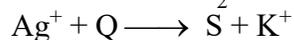
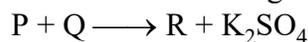
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Subjective

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- Ans. 6