

ORGANIC CHEMISTRY

NEET

CRASH COURSE

AROMATIC COMPOUNDS

SMART ACHIEVERS
JEE | NEET | FOUNDATION

587, Nitikhand-1, Indrapuram, Gzb.

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AROMATIC COMPOUNDS

- Q.1 Benzene is obtained when phenol is distilled with -
(1) Copper turnings (2) Aluminium dust (3) Zinc dust (4) Pumice stone
- Q.2 Acetylene on polymerisation gives -
(1) Mesitylene (2) Benzene (3) Ethyl benzene (4) Propyle benzene
- Q.3 Which one of the following is the most basic compound :
(1) $C_6H_5-NH_2$ (2) $C_6H_5-NHCH_3$ (3) $C_6H_5-N(CH_3)_2$ (4) $C_6H_5N(C_2H_5)_2$
- Q.4 The intermediate formed in the reaction of benzene with an electrophile is -
(1) Wheland intermediate (2) σ - complex
(3) Benzenium cation (4) All the above
- Q.5 Toluene may be prepared by -
(1) Friedel craft's reaction (2) Wurtz-fitting reaction
(3) Grignard reagent (4) All of the above
- Q.6 For preparing monoalkyl benzene, acylation process is preferred than direct alkylation because
(1) In alkylation, a poisonous gas is evolved
(2) In alkylation, large amount of heat is evolved
(3) In alkylation, polyalkylated product is formed
(4) Alkylation is very costly
- Q.7 The main product of the reduction of benzaldehyde with Zn-Hg/conc. HCl is -
(1) Benzyl alcohol (2) Cyclohexyl methanol
(3) Toluene (4) None of these
- Q.8 Nitration of toluene takes place at -
(1) o-Position (2) m-Position
(3) p-Position (4) Both o- and p-positions
- Q.9 Phenol and ethanol are distinguished by the reaction with
(1) Red litmus (2) $NaHCO_3$ (3) $FeCl_3$ (4) NaOH
- Q.10 Reimer Tiemann reaction involves -
(1) Carbanion intermediate (2) A carbene intermediate
(3) Carbonium ion intermediate (4) Free radical intermediate
- Q.11 The formulating agent in 'Gattermann Koch' synthesis is -
(1) CO + HCl (2) CO + H_2 (3) HCl + HCN (4) $CHCl_3$ + alc.KOH
- Q.12 Benzaldehyde is oxidised and reduced simultaneously in the presence of -
(1) $NaHCO_3$ (2) NaOH (3) Na_2CO_3 (4) HCl

- Q.13 Benzaldehyde can be converted to benzyl alcohol by –
(1) HCl (2) NaOH (3) LiAlH_4 (4) 2 and 3 are correct
- Q.14 HCHO and $\text{C}_6\text{H}_5\text{CHO}$ can be distinguished by –
(1) Fehling solution (2) Tollen's reagent (3) KMnO_4 (4) All of these
- Q.15 Reduction of nitrobenzene with zinc and methanolic alkali gives mainly
(1) Aniline (2) p-Aminophenol (3) Azoxybenzene (4) Azobenzene
- Q.16 An arene containing three primary, three secondary and three tertiary carbon atoms is –
(1) Cumene (2) Cymene (3) Mesitylene (4) Styrene
- Q.17 Benzene does not undergo addition reactions easily because –
(1) It has a cyclic structure
(2) Double bonds in it are very strong
(3) Resonance stabilized system is to be preserved
(4) It has six hydrogen atoms
- Q.18 Which of the following statements is correct –
(1) Bromination of toluene occurs faster than that of benzene
(2) Nitration of toluene is difficult than that of nitrobenzene
(3) The bromonium ion is a good nucleophile
(4) Effective nitrating agent is nitrate ion
- Q.19 Phenol and benzoic acid can be distinguished by –
(1) Aqueous NaHCO_3 (2) Aqueous NaNO_3
(3) Aqueous NaOH (4) Conc. H_2SO_4
- Q.20 Phenol and cyclohexanol can be distinguished by using –
(1) FeCl_3 (2) Na (3) PCl_5 (4) CH_3COCl
- Q.21 Which of the following compound is called cumene :
(1) Vinyl benzene (2) Ethyl benzene (3) Isopropyl benzene (4) t-Butyl benzene
- Q.22 Benzene in presence of u.v. light reacts with chlorine to form :
(1) Benzenehexachloride (2) Benzyl chloride
(3) 1,3,5-Trichlorobenzene (4) Chlorobenzene
- Q.23 Which of the following statements is not correct ?
(1) An aromatic molecule must be cyclic
(2) An aromatic ring must be planar
(3) An aromatic ring must involve cyclic delocalization of $(4n + 2)$ π -electrons
(4) An aromatic ring must involve cyclic delocalization of $4n$ π -electrons.

Q.24 Which of the following is not an aromatic compound:



Q.25 Identify the aromatic compound ?



Q.26 Among the following the anti aromatic species is :



Q.27 Number of π electrons present in naphthalene is:

- (1) 2 (2) 4 (3) 10 (4) 14

Q.28 The attacking electrophilic species in sulfonation of benzene is

- (1) SO_2 (2) SO_3 (3) SO_3^+ (4) Both (2) and (3)

Q.29 Amongst the following weakest activating group is :

- (1) $-\text{NH}_2$ (2) $-\text{NR}_2$ (3) $-\text{C}_6\text{H}_5$ (4) $-\text{NHCOCH}_3$.

Q.30 Which of the following compounds reacts slower than benzene in electrophilic bromination ?

- (1) $\text{C}_6\text{H}_5\text{CH}_3$ (2) $\text{C}_6\text{H}_5\text{OH}$ (3) $\text{C}_6\text{H}_5\text{NO}_2$ (4) $\text{C}_6\text{H}_5\text{NH}_2$

Q.31 Select the correct Statement .

- (I) Ortho-and para-directing groups increase electron density at ortho-and para-positions mainly
 (II) Meta-directing groups increase electron density at meta-position mainly
 (III) Meta-directing groups decrease electron density at ortho para position mainly
 (IV) Ortho-and para-directing groups decrease electron density at meta-position
 (1) I & II (2) I & III (3) III & IV (4) II & IV

Q.32 In the nitration of benzene with a mixture of conc. HNO_3 and conc. H_2SO_4 , the electrophile involved is:

- (1) NO_3^- (2) NO_2 (3) NO_2^- (4) NO_2^+

Q.33 Benzene when heated with conc. H_2SO_4 forms:

- (1) benzene sulphate (2) benzene sulphite
 (3) benzene hydrogen sulphate (4) benzene sulphonic acid

Q.34 Benzene reacts with n-propyl chloride in the presence of anhydrous AlCl_3 to give predominantly:

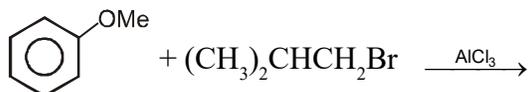
- (1) n-propylbenzene (2) isopropylbenzene
 (3) 3-propyl-1-chlorobenzene (4) no reaction

Q.35 Nitrobenzene does not undergo Friedel-Crafts alkylation and acylation reactions because :

- (1) it is a highly polar compound
- (2) it is steam volatile
- (3) its ring is deactivated by the electron withdrawing effect of the nitro substituent
- (4) it forms a complex with AlCl_3 in which the ring is highly deactivated by the strong electron withdrawing effect of $-\text{N}=\text{O}^+-\bar{\text{AlCl}}_3$ group



Q.36 The major product formed in the reaction

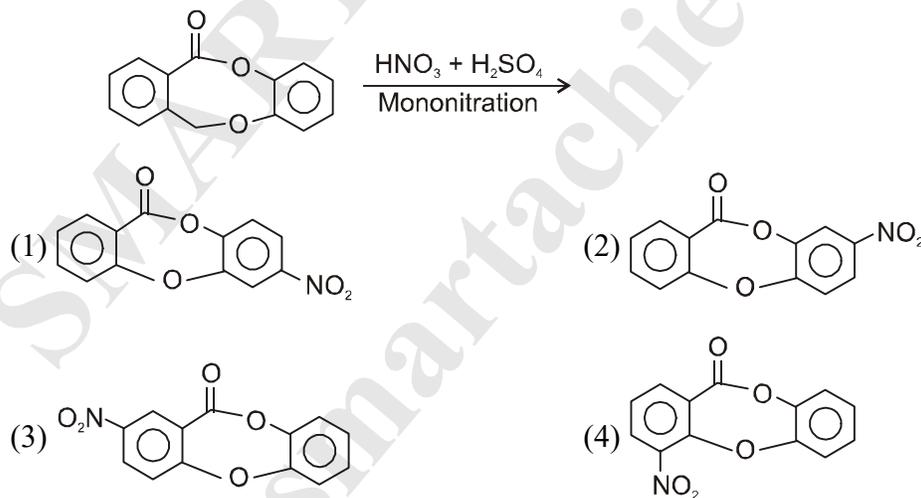


- (1)
- (2)
- (3)
- (4)

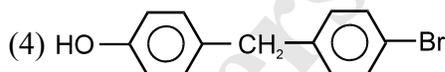
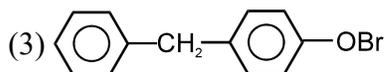
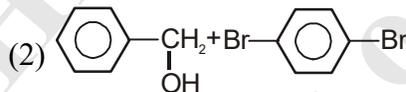
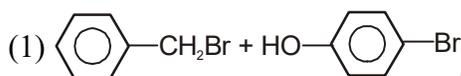
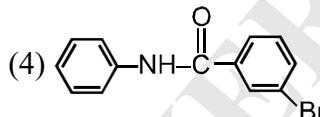
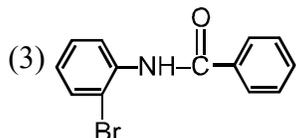
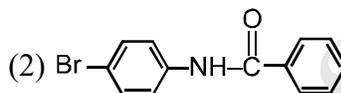
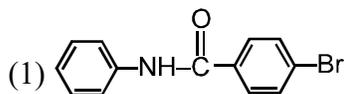
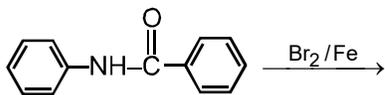
Q.37 In the sulphonation, acetylation and formylation of benzene the group of effective electrophiles would be:

- (1) SO_3^+ , $\text{CH}_3-\overset{\oplus}{\text{C}}=\text{O}$, $\text{H}-\overset{\oplus}{\text{C}}=\text{O}$
- (2) SO_3 , $\text{CH}_3-\overset{\oplus}{\text{C}}=\text{O}$, $\text{H}-\overset{\oplus}{\text{C}}=\text{O}$
- (3) SO_3 , CH_3CHO , $\text{CO} + \text{HCl}$
- (4) HSO_3 , $\text{CH}_3-\overset{\oplus}{\text{C}}=\text{O}$, $\text{H}-\overset{\oplus}{\text{C}}=\text{O}$

Q.38 The end product of following reaction is



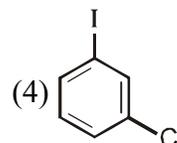
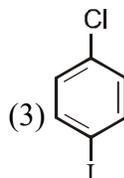
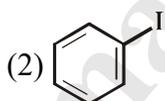
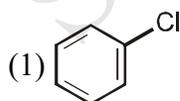
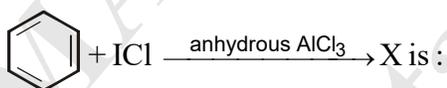
Q.39 The major product obtained in the following is :



Q.41 o,p-directing group are mostly :

- (1) Activating group (2) Deactivating groups (3) Neutral groups (4) None of these

Q.42 The compound X in the reaction,



Q.43 Nitrobenzene can be prepared from benzene by using a mixture of conc. HNO_3 and conc. H_2SO_4 . In the nitrating mixture HNO_3 acts as a :

- (1) Base (2) Acid (3) Reducing agent (4) Catalyst

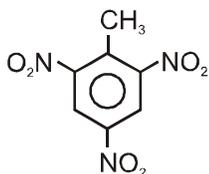
Q.44 Toluene and chromyl chloride reacts to produce :

- (1) Benzoic acid (2) Benzaldehyde (3) Chlorotoluene (4) Benzyl chloride

Q.45 Chlorination of toluene in the presence of light and heat followed by treatment with aqueous NaOH gives:

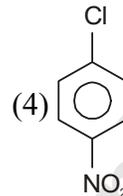
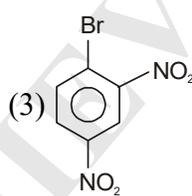
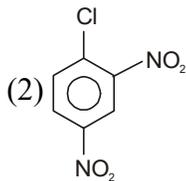
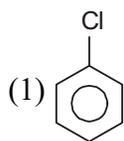
- (1) o-Cresol (2) p-Cresol
(3) 2,4-Dihydroxytoluene (4) Benzyl alcohol

Q.46 How is 2,4,6-trinitrotoluene (TNT) widely used:

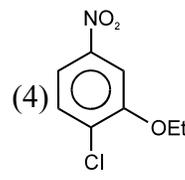
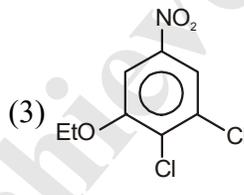
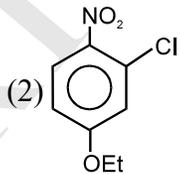
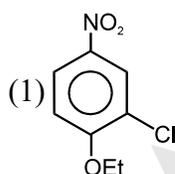


- (1) Insecticide (2) Drug (3) Explosive (4) Dye

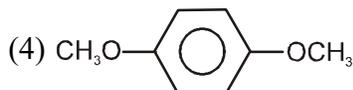
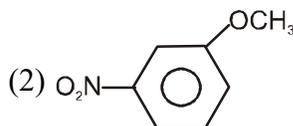
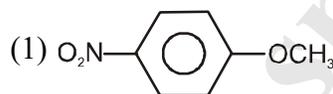
Q.47 In which case S_N2 reaction is fastest?

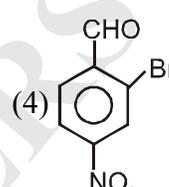
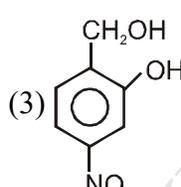
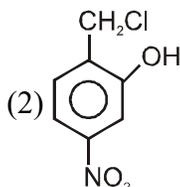
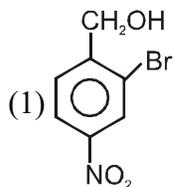
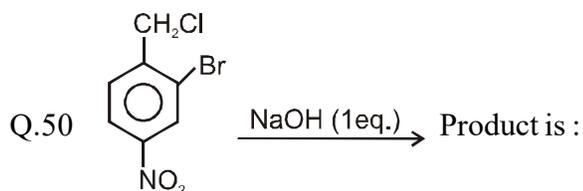


Q.48 $\xrightarrow[(1 \text{ mol}), \Delta]{\text{EtONa}}$ The product is:

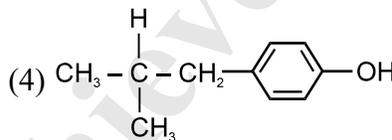
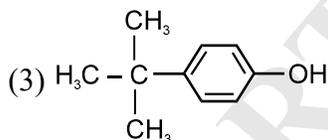
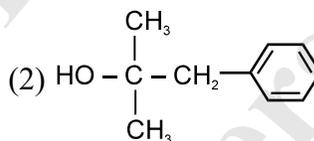
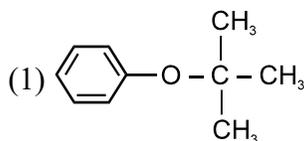
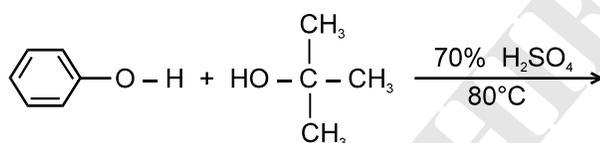


Q.49 $\xrightarrow[\Delta]{\text{CH}_3\text{ONa}}$





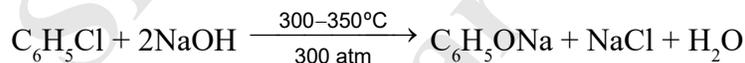
Q.51 The major product of the following reaction is



Q.52 Anisole can be prepared by the action of methyl iodide on sodium phenate. The reaction is called

- (1) Fittig reaction (2) Etard reaction (3) Wurtz reaction (4) Williamson reaction

Q.53 Following equation illustrates



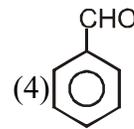
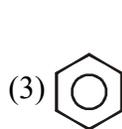
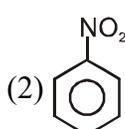
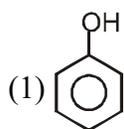
- (1) Dow's process (2) Kolbe's process (3) Carbylamine test (4) Haloform reaction

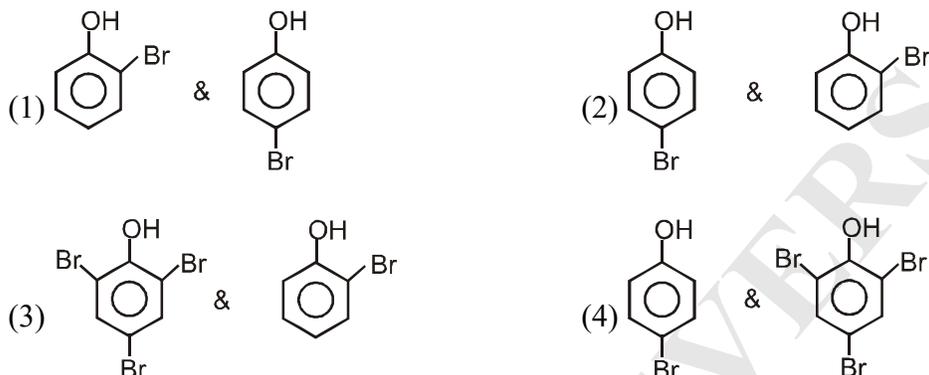
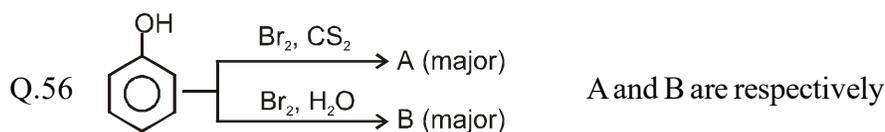
Q.54 Phenol + CHCl_3 + $\text{KOH} \longrightarrow$ product is :

- (1) Benzoic acid (2) p-chlorophenol (3) Salicylaldehyde (4) salicylic acid

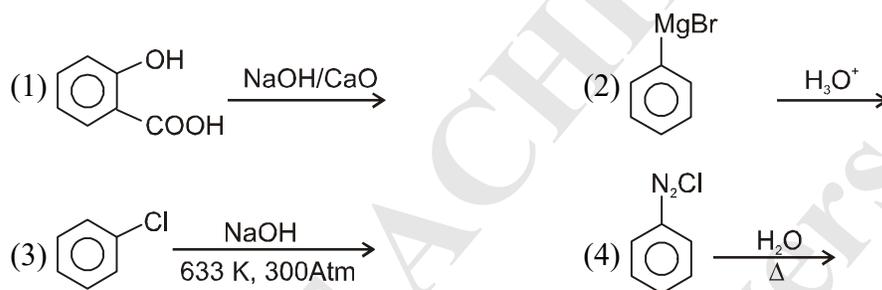
Q.55 $\text{A} + \text{CCl}_4 + \text{KOH} \rightarrow$ Salicylic acid

'A' in above reaction is

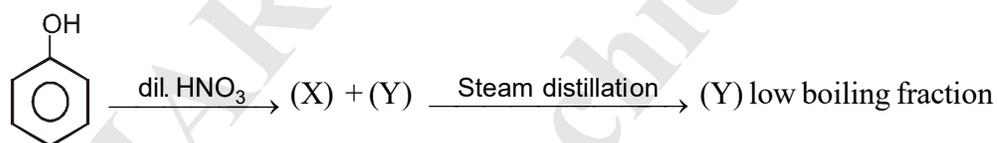




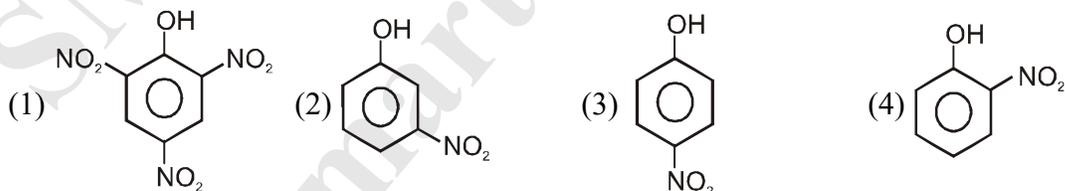
Q.57 In which of the following reactions phenol is not obtained :



Q.58 Observe the following reaction, and select the correct option

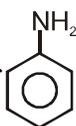


'Y' is :

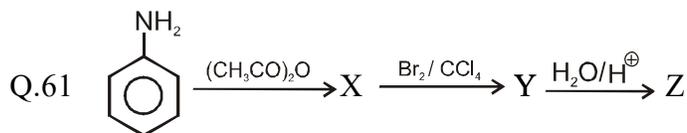


Q.59 Aniline can be obtained by reduction of nitrobenzene with

- (1) Fe / HCl
- (2) Sn / HCl
- (3) Electrolytic reduction under weakly acidic conditions
- (4) All.

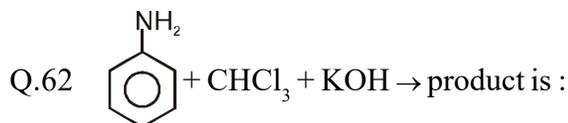
Q.60 Electrophilic substitution of  with bromine water gives :

- (1) 2,3,4-Tribromo aniline (2) 2, 4, 6-Tribromo aniline
 (3) 4-Bromo aniline (4) 3-Bromo aniline



Identify 'Z'

- (1) p-Bromo aniline (2) p-Bromo acetophenone
 (3) p-Bromo acetanilide (4) o-Bromo acetophenone



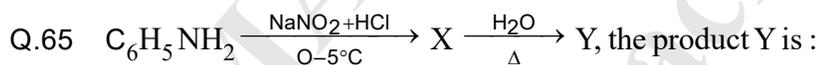
- (1) Phenyl isocyanide (2) Benzyl amine
 (3) Benzyl chloride (4) None of these

Q.63 A mixture of 1°, 2° and 3° amines can be separated by Hinsberg's reagent which is

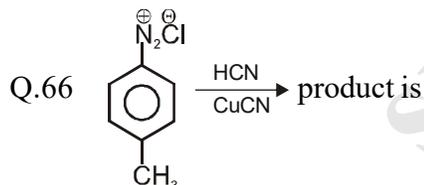
- (1) Benzoyl chloride (2) Acetyl chloride
 (3) Benzenesulphonyl chloride (4) Benzyl chloride

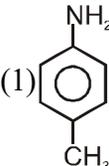
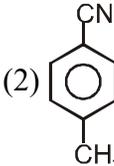
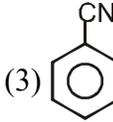
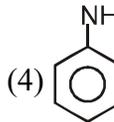
Q.64 Aniline on treatment with nitrous acid ($\text{NaNO}_2 + \text{HCl}$) at 0°C forms :

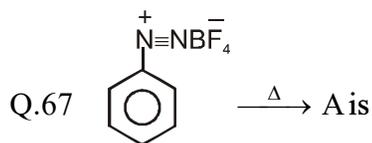
- (1) phenol (2) nitrobenzene
 (3) nitrosobenzene (4) benzene diazonium chloride



- (1) Benzenediazonium chloride (2) Nitrobenzene
 (3) Phenol (4) Cresol

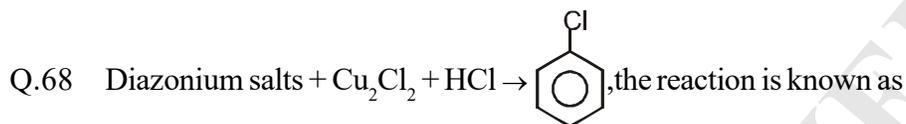


- (1)  (2)  (3)  (4) 

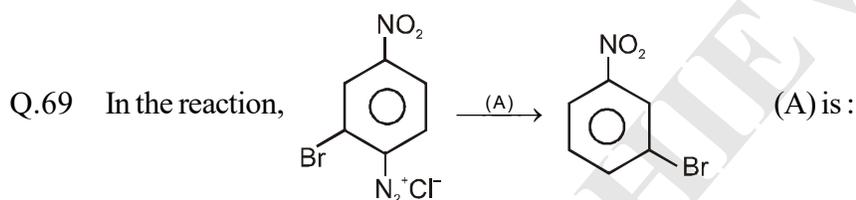


In the above process product A is

- (1) Fluorobenzene (2) Benzene
(3) 1,4-Difluorobenzene (4) 1,3-Difluorobenzene

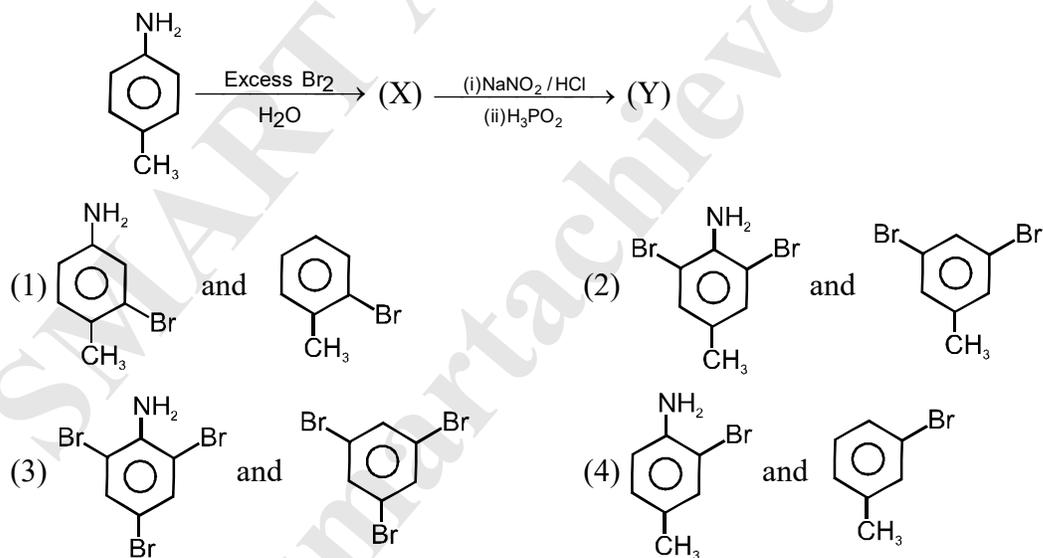


- (1) Chlorination (2) Sandmeyer's reaction (3) Perkin reaction (4) Carbyl amine reaction

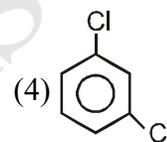
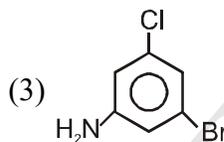
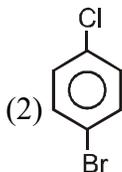
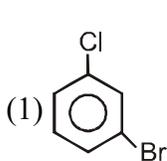
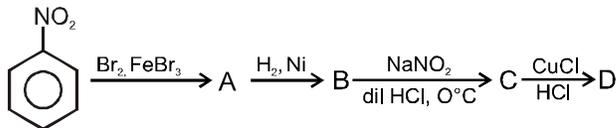


- (1) H_3PO_2 (2) Cu_2Cl_2 (3) $\text{HgSO}_4/\text{H}_2\text{SO}_4$ (4) $\text{H}^+/\text{H}_2\text{O}$

Q.70 In the following reaction sequence, the compounds (X) and (Y) respectively are :



Q.71 Consider the following sequence of reactions.



Q.72 The well known explosive TNT stands for

(1) 2, 3, 6-Trinitrotoluene

(2) 3, 4, 5-Trinitrotoluene

(3) 2, 3, 5-Trinitrotoluene

(4) 2, 4, 6-Trinitrotoluene

Q.73 Aniline, chloroform and alcoholic KOH reacts to produce a bad smelling substance which is :

(1) phenyl isocyanide

(2) phenyl cyanide

(3) chloro benzene

(4) benzyl alcohol

Q.74 A positive carbylamine test is given by :

(1) N,N-dimethylaniline

(2) 2, 4-dimethylaniline

(3) N-methyl-o-methylaniline

(4) N-methylaniline

Q.75 The Hinsberg's method is used for :

(1) preparation of primary amines

(2) preparation of secondary amines

(3) preparation of tertiary amines

(4) separation of amine mixtures

Q.76 Which of the following amine does not react with Hinsberg's reagent ?

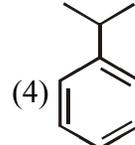
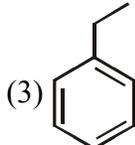
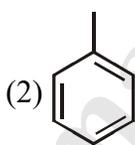
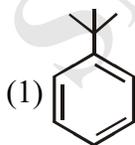
(1) $\text{CH}_3\text{CH}_2\text{NH}_2$

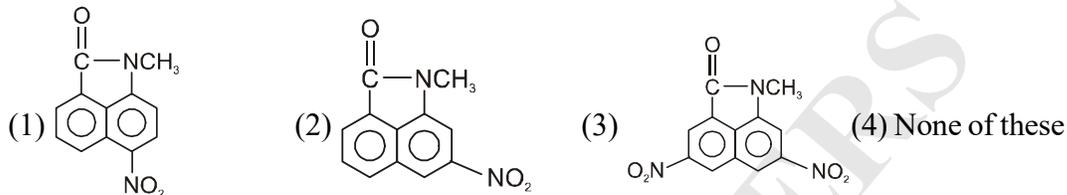
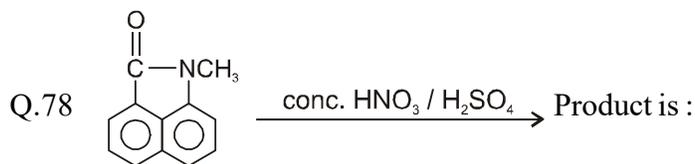
(2) $(\text{CH}_3\text{CH}_2)_2\text{NH}$

(3) $(\text{CH}_3\text{CH}_2)_3\text{N}$

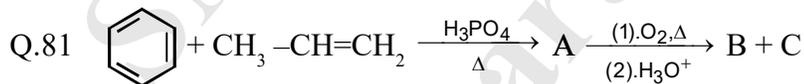
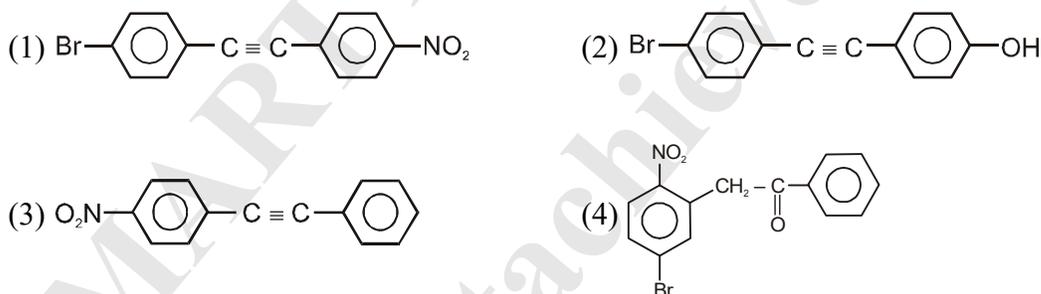
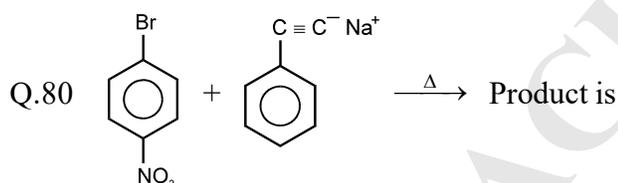
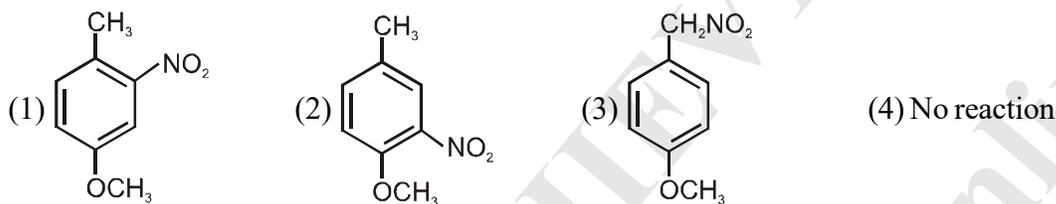
(4) All of these

Q.77 Which of the following will undergo sulphonation at fastest rate ?





Q.79 If p-methoxytoluene is nitrated, the major product is :



The products B & C are respectively

- (1) Phenol & acetic acid (2) Phenol & acetaldehyde
 (3) Benzoic acid & acetone (4) Phenol & acetone

Q.82 Nitration of aniline also give m-nitro aniline, in strong acidic medium because

- (1) Amino group is meta directive.
 (2) In spite of substituents nitro group always goes to m-position.
 (3) In strong acidic medium, nitration of aniline is a nucleophilic substitution reaction.
 (4) In strong acidic medium aniline converts into anilinium ion.

ASSERTION AND REASON

Directions : Each of these questions contains an Assertion followed by reason. Read them carefully and answer the question on the basis of following options. You have to select the one that best describes the two statements.

- (1) If both assertion and reason are true and reason is the correct explanation of assertion.
- (2) If both assertion and reason are true but reason is not the correct explanation of assertion.
- (3) If Assertion is true but reason is false.
- (4) If both assertion and reason are false.

- Q.83 **Assertion :** Benzenediazonium ion couples with aniline effectively in a weakly acidic medium.
Reason : In a weakly acidic medium the aniline becomes respectively more activated for electrophilic substitution.
- Q.84 **Assertion :** Nitrobenzene cannot undergo Friedel-Crafts reaction.
Reason : Friedel-Craft reaction is an electrophilic substitution reaction.
- Q.85 **Assertion :** The presence of nitro group facilitates nucleophilic substitution reaction in aryl halides
Reason : The intermediate carbanion is stabilized due to the presence of nitro group.
- Q.86 **Assertion :** Phenol on treatment with $\text{Br}_2/\text{H}_2\text{O}$ gives tribromoderivatives while with Br_2, CS_2 gives a monobromo derivatives.
Reason : H_2O helps to increase the activity of the phenol ring.
- Q.87 **Assertion :** p-Nitrophenol gives more electrophilic substituted compound than m-methoxyphenol.
Reason : Methoxy group shows only negative I-effect.

ANSWER KEY

Q.1	3	Q.2	2	Q.3	4	Q.4	4	Q.5	4	Q.6	3	Q.7	3
Q.8	4	Q.9	3	Q.10	2	Q.11	1	Q.12	2	Q.13	4	Q.14	1
Q.15	1	Q.16	3	Q.17	3	Q.18	1	Q.19	1	Q.20	1	Q.21	3
Q.22	1	Q.23	4	Q.24	2	Q.25	2	Q.26	2	Q.27	3	Q.28	4
Q.29	3	Q.30	3	Q.31	2	Q.32	4	Q.33	4	Q.34	2	Q.35	4
Q.36	4	Q.37	2	Q.38	2	Q.39	2	Q.40	1	Q.41	1	Q.42	2
Q.43	1	Q.44	2	Q.45	4	Q.46	3	Q.47	2	Q.48	1	Q.49	1
Q.50	1	Q.51	3	Q.52	4	Q.53	1	Q.54	3	Q.55	1	Q.56	4
Q.57	2	Q.58	4	Q.59	4	Q.60	2	Q.61	1	Q.62	1	Q.63	3
Q.64	4	Q.65	3	Q.66	2	Q.67	1	Q.68	2	Q.69	1	Q.70	2
Q.71	1	Q.72	4	Q.73	1	Q.74	2	Q.75	4	Q.76	3	Q.77	2
Q.78	1	Q.79	2	Q.80	3	Q.81	4	Q.82	4	Q.83	3	Q.84	2
Q.85	1	Q.86	1	Q.87	4								