



## CHEMISTRY

### BOOKS - S DINESH & CO CHEMISTRY (HINGLISH)

## CYANIDES, ISOCYANIDES, NITROCOMPOUNDS AND AMINES

### MCQs

1. Which of the following substances on treatment with  $P_2O_5$  gives ethanenitrile?

- A. propanamide
- B. ethanamide
- C. ethanoic acid

D. N-methylethyl amine

**Answer: B**

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2. Which of the following reagents on treatment with benzenamine in basic medium produces phenyl isocyanide ?

A.  $CCl_4$

B. trichloromethane

C. methylene dichloride

D. hexachloroethane

**Answer: B**

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3. The IUPAC name of acrylonitrile is

- A. vinyl cyanide
- B. ethenyl nitrile
- C. prop-2-enenitrile
- D. cyanoethene

**Answer: C**



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4. Which of the following is not an ambident nucleophile?

- A.  $\text{NO}_2^-$
- B.  $\text{SCN}^-$
- C.  $\text{CN}^-$

D.

**Answer: B**

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5. The number of  $\pi$ -bonds in the structure  $CN - CH = CH - CN$  are

A. 5

B. 4

C. 3

D. 2

**Answer: A**

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6. Methyl cyanide on treatment with methyl magnesium bromide followed by subsequent hydrolysis gives:

- A. propanone
- B. ethanone
- C. ethanal
- D. propanal

**Answer: A**



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7. The product formed by the treatment of ethanol and ethane nitrile in the presence of sulphuric acid is:

- A. ethyl acetate
- B. diethyl ether

C. ethyl methyl ketone

D. butanal

**Answer: A**

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8. (A) is subjected to reduction with  $Zn - (Hg/HCl)$  and the product formed is N-methylmethanamine. (A) can be.

A. ethanenitrile

B. nitroethane

C. carbylamioethane

D. Methylisocyanide

**Answer: D**

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9. Mendius reaction involves the:

- A. reduction of aldehydes to give alcohols
- B. reduction of nitriles with sodium and ethanol
- C. oxidation of nitriles
- D. hydrolysis of cyanides

**Answer: B**

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10. Stephen's reduction converts nitriles into:

- A. aldehydes
- B. ketones

C. amines

D. carboxylic acids

**Answer: A**



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11. Which reagent should be employed to get ethyl carbamine iodide as major product?

A. HCN

B. AgCN

C. KCN

D.  $AgNO_2$  followed by reduction

**Answer: B**



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12. An organic compound with the formula  $C_3H_5N$  hydrolysis forms an acid which reduces Fehling solution. The compound can be :

- A. Ethanenitrile
- B. Isocyanethane
- C. Ethoxyethane
- D. Propanenitrile

**Answer: B**

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13. Which of the following will yield benzaldimine hydrochloride ?

- A. benzene and hydrazine

B. hydrazine and HCl

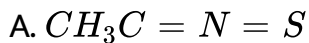
C. benzonitrile and  $\text{SnCl}_2 / \text{HCl}$

D. nitrobenzene and  $\text{SnCl}_2 / \text{HCl}$

**Answer: C**

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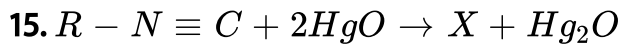
**14.** Which of the following represents the poisonous gas which caused the tragedy in Bhopal in 1984 ?



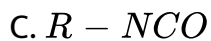
**Answer: B**



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Identify X in the above reaction

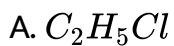


Answer: C



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16. Ethyl amine reacts with nitrosyl chloride to form



B.  $C_2H_5OH$

C. Ethyl nitrate

D. Nitroethane

**Answer: A**

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17. Grignard's reagent on treatment with cyanogen chloride gives

A. Isocyanate

B. Isocyanides

C. Cyanides

D. Chlorides

**Answer: C**

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18. The reactions exhibited by cyano group are similar to

- A. Nitro group
- B. Amino group
- C. Carbonyl group
- D. Hydroxy group

Answer: C

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19. An organic compound (A),  $C_2H_5NO_2$  gives on reduction another compound (B)  $C_2H_7N$ . The reaction of nitrous acid on (B) evolves nitrogen and gives another compound (C)  $C_2H_6O$ . The

compound (C) on oxidation gives acetic acid. The compounds A, B,

C are

- A. Nitroethane, Ethylamine, Ethyl alcohol
- B. Nitroethane, Dimethylamine, Ethyl alcohol
- C. Nitroethane, Dimethylamine, Acetone
- D. None

**Answer: A**



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20. The IUPAC name of  $\underset{\text{CN}}{\text{CH}_2} - \underset{\text{CN}}{\text{CH}} - \underset{\text{CN}}{\text{CH}_2}$  is:

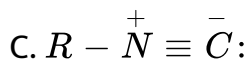
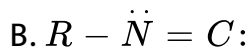
- A. 1,2,3-tricyanopropane
- B. 3-cyanopentane-1, 5-dinitrile
- C. Propane-1,2,3-tricarbonitrile

D. 1,2,3-Propane trinitrile

**Answer: C**

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21. Which of the following represents isocyanide ion ?



D. All the above

**Answer: D**

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22. Hydrolysis of benzonitrile gives :

- A. Benzyl amine
- B. Aniline
- C. Benzoic acid
- D. Benzene

**Answer: C**



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23. Cyanides and isocyanides are isomers of the type

- A. Positional
- B. Functional
- C. Tautomer

D. All the three

**Answer: B**



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24. Dehydration of primary amides with  $P_2O_5$  gives

A. Cyanides

B. Isocyanides

C. Amines

D. Nitrocompounds

**Answer: A**



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25. Which of the following statements is not correct ?

- A. Alkyl isocyanides have unpleasant smell while alkyl cyanide have pleasant smell
- B. Alkyl cyanides are not as poisonous as KCN.
- C. Alkyl cyanides have lower boiling points than corresponding alkyl isocyanides.
- D. Acetonitrile is water soluble while methyl isocyanide is not.

**Answer: C**

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26. Reduction of alkane nitriles with sodium and alcohol is known as :

- A. Rosenmund reduction
- B. Mendius reaction
- C. Stephen reduction
- D. Wolff-Kishner reduction

**Answer: B**



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27. Which one of the following behaves both as a nucleophile and an electrophile ?

- A.  $CH_3 - C \equiv N$
- B.  $CH_3OH$
- C.  $CH_2 = CH - CH_3$
- D.  $CH_3NH_2$

**Answer: A**

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**28.** Partial hydrolysis of alkane nitrile with alkaline  $H_2O_2$  gives:

- A. Acid amide
- B. Alkanoic acid
- C. Acid anhydride
- D. Alkyl cyanide

**Answer: A**

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29. Reaction between Grignard's reagent and cyanogen chloride gives :

- A. alkane nitrile
- B. alkyl carbonyl amine
- C. alkyl amine
- D. alkyl isocyanide

**Answer: A**



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30. A mixture of stannous chloride and conc. HCl reduces an alkane nitrile to alkanal. This is known as :

- A. Perkin reaction

B. Nef reaction

C. Stephen's reaction

D. Ullmann reaction

**Answer: C**



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**31.** When methyl isocyanide is heated with sulphur the product formed is

A. methyl isocyanate

B. methyl isothiocyanate

C. dimethyl thioether

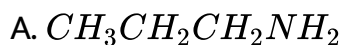
D. ethanethiol

**Answer: B**



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32. Boiling of propanenitrile in aqueous alkaline solution will result in formation of



**Answer: B**



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33. Reaction of benzonitrile with methyl magnesium iodide followed by hydrolysis gives :

A. toluene

B. acetophenone

C. Benzoic acid

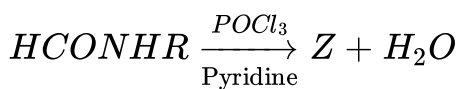
D. iodobenzene

**Answer: B**



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**34.** In the reaction given below identify 'Z'



A. RCN

B.  $RN = C = O$

C.  $R - N \rightleftharpoons C$

D. None of these

**Answer: C**

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**35.** Reaction of ethyl bromide with sodium cyanide gives a mixture of ethyl cyanide and ethyl isocyanide because :

- A. the products are isomeric
- B.  $\overset{C}{N}$  is an ambident nucleophile
- C. KCN is covalent compound
- D. a rearrangement takes place

**Answer: B**

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36. When propane is subjected to the treatment with fuming nitric acid at 673 K which of the following will not form ?

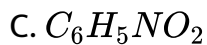
- A. 1-nitropropane
- B. 2-nitropropane
- C. nitromethane
- D. nitrohexane

**Answer: D**

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37. Which of the following represents nitroarene ?

- A. Phenylnitromethane
- B.  $C_6H_5CH_2CH_2NO_2$

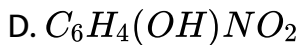
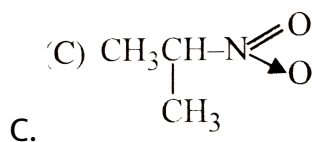
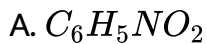


D. All the above

**Answer: C**

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**38.** Which of the following is not a nitroderivative ?

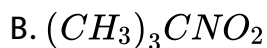
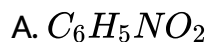


**Answer: B**

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39. Which of the following nitro compound will show tautomerism

?

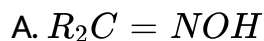


Answer: C

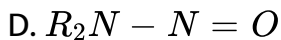
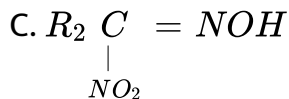
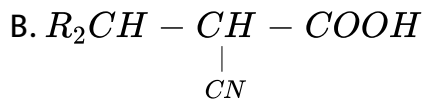


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40. Which of the following structures represent nitrolic acid ?







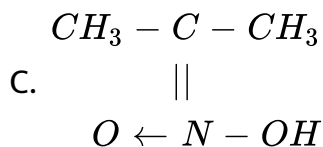
**Answer: C**

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41. Which of the following compounds is isomeric with 2-nitropropane ?

A. n-Propylnitrite

B. Isopropyl nitrite

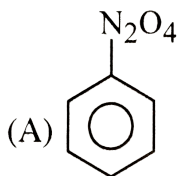


D. All the above

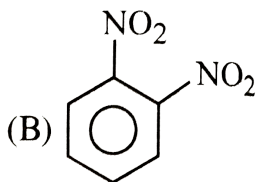
Answer: D

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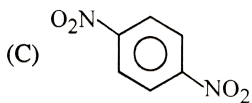
42. An organic compound (X)  $C_6H_4N_2O_4$  is insoluble in both dil. acid and base and its dipole moment is zero. Deduce structure of (X).



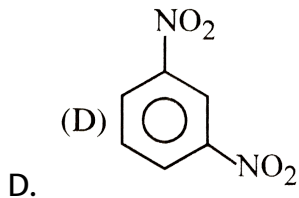
A.



B.



C.



**Answer: C**

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**43.** Reduction of nitrobenzene with zinc dust and aqueous ammonium chloride yields

- A. benzenamine
- B. aniline
- C. N-phenylhydroxylamine
- D. none of above

**Answer: C**

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44. A primary nitroalkane is treated with nitrous acid, which of the following will be the main product?

- A. pseudonitrol
- B. nitrolic acid
- C. a primary amine
- D. primary alcohol

**Answer: B**



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45. Nitromethane is subjected to treatment with chlorine in the presence of sodium hydroxide, the main product is:

A. monochloronitromethane

B. trichloromethane

C. chloropicrin

D. none of above

**Answer: C**



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**46.** Which of the following groups will facilitate the electrophilic attack on benzene ring?

A.  $-NO_2$

B.  $-NH_2$

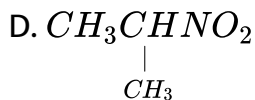
C.  $-CH_3$

D.  $-OH$

Answer: A

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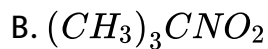
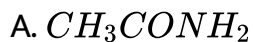
47. A nitrogenous substance X is treated with  $HNO_2$  and the product so formed is further treated with NaOH solution, which produces blue colouration. Which of the following can X be ?



Answer: D

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48. Which of the following would not react with  $HNO_2$ ?



Answer: B



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49.  $NO_2^+$  is called

A. Nitronium ion

B. Nitrosonium ion

C. Nitro group

D. None of above

**Answer: A**

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50. Which of the following reagent/process can provide distinction between ethyl nitrite and nitroethane ?

A.  $CH_3COCl$

B.  $C_6H_5COCl$

C. Ammonolysis

D. Reduction

**Answer: D**

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51. Reduction of nitrobenzene with tin-HCl gives

- A. aniline
- B. azoxybenzene
- C. phenylhydroxylamine
- D. azobenzene

**Answer: A**

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52. Which of the following on hydrolysis does not give benzoic acid

?

- A. Toluene
- B. Benzamide

C. Benzonitrile

D. Benzoyl chloride

**Answer: A**

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**53.** Which of the following produces one mononitro and three isomeric dinitro derivatives ?

A. *p* – Xylene

B. Ethyl benzene

C. *o* – Xylen

D. *m* – Xylene

**Answer: A**

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54. 

In the above sequence X is

- A. nitrochloromethane
- B. chloropicrin
- C. ethane nitrile
- D. none of the above.

**Answer: B**

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55. The electrolytic reduction of nitrobenzene in strongly acidic medium produces .

- A. Phenol

B. *p* – Aminophenol

C. Hydroazobenzene

D. Azobenzene

**Answer: B**



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56. Azoxybenzene can be obtained by treatment of nitrobenzene with

A.  $O_2$

B.  $H_2 / Pt$

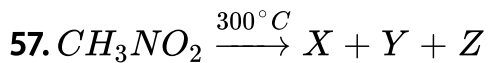
C.  $Na_3AsO_3 / NaOH$

D.  $Zn / NaOH$

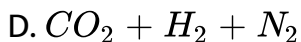
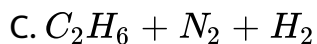
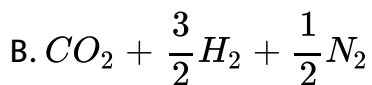
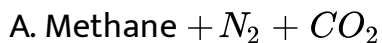
**Answer: C**



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In this sequence  $X + Y + Z$  are



**Answer: B**



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58. Acetaldehyde reacts with nitroethane in the presence of dil.

$NaOH$  to give

- A. Ethyl alcohol
- B. Nitroaldehyde
- C. Nitroalcohol
- D. Ethylnitrite

**Answer: C**



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**59.** Amatol is blasting material which is obtained by mixing TNT with

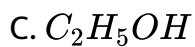
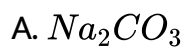
- A.  $NH_4Cl$
- B.  $NH_4Br$
- C.  $NH_4NO_3$
- D.  $(NH_4)_2SO_4$

**Answer: C**



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**60.** Nitroethane is acidic only towards



**Answer: B**



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61. The reaction



is known as

- A. pinacol-pinacolone rearrangement
- B. curtius rearrangement
- C. benzidine rearrangement
- D. none of these

**Answer: C**



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62. Nitrobenzene reacts with acetyl chloride in the presence of anhydrous  $AlCl_3$  to form

- A. 2 – nitroacetophenone



B. 3 – nitroacetophenone

C. 4 – nitroacetophenone

D. none of these

**Answer: D**



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**63.** The end product 'C' in the following sequence of reaction is



A. 

B. 

C. 

D. 

**Answer: C**



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64. Nitrobenzene on reduction with  $LiAlH_4$  in ether gives

- A. azobenzene
- B. hydrazobenzene
- C. aniline
- D. azoxybenzene

**Answer: A**



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65. Which of the following would react with nitrobenzene to give azoxybenzene

- A. acidic glucose solution

B.  $Zn, NaOH$

C.  $Zn/NaOH, CH_3OH$

D.  $Na_3AsO_3 + NaOH$

**Answer: D**



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66. Nitrobenzene can be converted into hydroxobenzene by reduction with

A. Zn and alcoholic NaOH

B. Zn and aqueous NaOH

C.  $NH_2NH_2$  and alcoholic KOH

D. Zn and HCl

**Answer: B**



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67. During nitration of benzene with nitrating mixture,  $HNO_3$  acts as

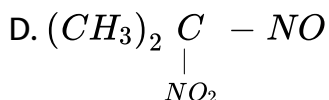
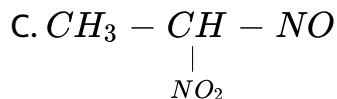
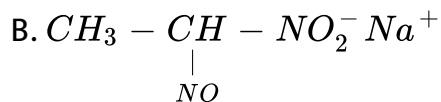
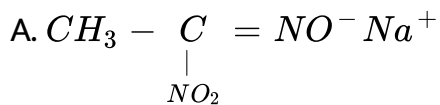
- A. base
- B. acid
- C. reducing agent
- D. catalyst.

**Answer: A**



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68. The red coloured compound formed in the Victor Meyer's test for ethyl alcohol is :

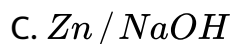


**Answer: A**



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**69.** Nitrobenzene can be converted into azobenzene by reduction with



D.  $LiAlH_4$ , ether

**Answer: B**

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70. Which has the maximum dipole moment ?

A. 

B. 

C. 

D. 

**Answer: D**

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71. Hydrazobenzene reacts with cold conc. HCl to form :

- A. Azobenzene
- B. Benzidine
- C. Azoxybenzene
- D. Azobenzene-4-sulphonic acid.

**Answer: B**



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72. The ease of nitration of the type of alkanes is maximum for

- A.  $1^\circ$
- B.  $2^\circ$
- C.  $3^\circ$

D. all have equal ease

**Answer: C**



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**73.** Secondary nitro compounds on hydrolysis in acidic medium give

A. ketones

B. carboxylic acid

C. nitrolic acid

D. none of these

**Answer: A**



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74. Which of the following compounds does not show tautomerism ?

A. Nitromethane

B. 2 – Nitropropane

C. Nitroethane

D. Nitrobenzene

**Answer: D**



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75. Gabriel phthalimide synthesis is used in the preparation of

A.  $1^\circ$  Amines

B.  $2^\circ$  Amines

C. 3° Amines

D. Mixture of all the three.

**Answer: A**

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76. When acetamide is treated with  $Br_2$  and caustic soda, then we get

A. N-bromoamide

B. bromoacetic acid

C. methanamine

D. ethane

**Answer: C**

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77. Ethyl magnesium bromide and chloramine react to produce

- A. Ethyl amine
- B. Ethyl chloride
- C. Ethyl alcohol
- D. Ethanenitrile

**Answer: A**

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78. Which of the following on boiling with  $Na_2CO_3$  (aq) gives aniline ?

- A. Nitrobenzene

- B. Anilinium chloride
- C. Chlorobenzene
- D. Benzene diazonium chloride

**Answer: B**

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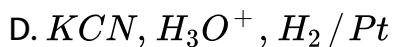
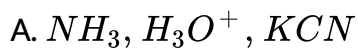
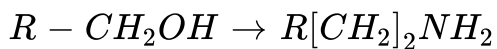
**79.** Which of the following reaction does not produce amine ?

- A. Gabriel's synthesis
- B. Hoffmann bromoamide reaction
- C. Carbylamine reaction
- D. Mendius reaction

**Answer: C**

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80. Which is the correct sequence to convert



Answer: C



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81. The product formed when phthalimide is treated with a mixture of  $Br_2$  and strong  $NaOH$  solution is

A. Aniline

B. Phthalamide

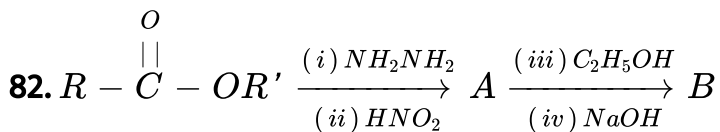
C. Phthalic acid

D. Anthranilic acid

**Answer: D**



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Identify A and B in the above reaction

A.  $RCHO, RCOOH,$

B.  $RNH_2, RCOOH$

C.  $RN_2^+ Cl^{\ominus}, R - H$

D.  $RNCO, RNH_2$

Answer: D

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83. The catalyst used in getting aniline from chlorobenzene is

A.  $Pt$

B.  $Ni$

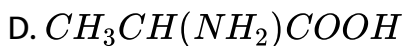
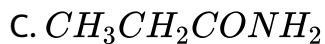
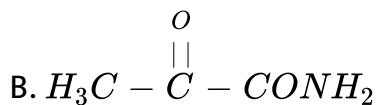
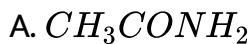
C.  $Cu_2O$

D.  $Pd$

Answer: C

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84.  $H_3C - \overset{\overset{O}{||}}{C} - COOH \xrightarrow[\text{(ii) } H_2 / Pd]{\text{(i) } NH_3} (A)$ . Identify (A)



**Answer: D**



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85. 

The above reaction is known as

A. Curtius reaction

B. Schmidt reaction

C. Hoffmann's reaction

D. Dow's process



**Answer: D**



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**86.** The reaction of primary amine with chloroform and ethanolic solution of KOH is called:

- A. Hoffmann's reaction
- B. Reimer Tiemann's reaction
- C. Carbylamine reaction
- D. Koble's reaction

**Answer: C**



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87. Ethanamine is treated with nitrous acid at ordinary temperature, the product will be

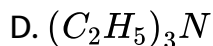
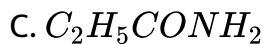
- A. ethanol only
- B. ethanol, acetic acid,  $N_2$  and  $H_2O$
- C. acetic acid, ethane and  $H_2O$
- D. ethanol, ethene, ethyl chloride and  $N_2$

**Answer: D**

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88. Which of the following undergoes Mustard oil reaction ?

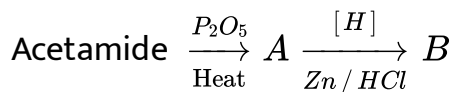
- A.  $C_2H_5NH_2$
- B.  $(C_2H_5)_2NH$



**Answer: A**

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**89.** What is the end product in the following sequence of reaction ?



A. Methylamine

B. Ethylamine

C. Methyl isocyanide

D. Ammonium acetate

**Answer: B**

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90. The reduction of which of the following compounds would yields secondary amine

- A. alkyl nitrile
- B. carbylamine
- C. primary amine
- D. sec. nitro compound

**Answer: B**

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91. Which of the following statement is correct ?

- A. Methylamine is slightly acidic

B. Methylamine is less basic than ammonia

C. Methylamine is less basic than dimethyl amine

D. Methyl amine is less basic than Aniline

**Answer: C**



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92. Which of the following can produce hydrogen when treated with metallic sodium ?

A.  $CH_3NH_2$

B.  $CH_3CONH_2$

C.  $(CH_3)_2NH$

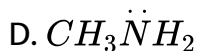
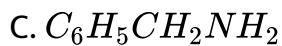
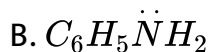
D.  $C_6H_5NH_2$

**Answer: B**



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93. Which of the following is the weakest base?

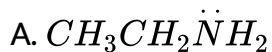


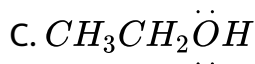
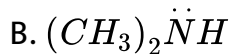
Answer: B



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94. Which of the following is the weakest base ?





**Answer: C**



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95. Which reaction can be used for the direct conversion of amides into  $1^\circ$  amine ?

A. Claisen reaction

B. Perkin's reaction

C. Hoffmann's reaction

D. Reduction with  $LiAlH_4$

**Answer: D**



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96. The basic character of amines is because

- A. They produce  $OH^-$  ions when treated with water
- B. They have replaced H atoms on H atom
- C. They have lone pair of electron on N atom
- D. None of the reason is correct.

**Answer: C**



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97.  $-NH_2$  group in aniline is

- A. meta directing



B. ortho directing

C. para directing

D. *o* – and *p* – direction

**Answer: D**



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**98.** Which reagent is generally used for the separation of  $1^\circ$ ,  $2^\circ$  and  $3^\circ$  amines ?

A. *AcCl*

B. Benzene sulphonyl chloride (*BSC*)

C.  $(COOC_2H_5)_2$  as well as *BSC*

D. *HNO*<sub>2</sub>

**Answer: B**



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99. Diethyl amine on oxidation with  $KMnO_4$  produces

- A. Ethanal
- B. Propanone
- C. Tetraethyl hydrazine
- D. Ethyl amine and ethanol

**Answer: C**



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100. In order to distinguish between  $C_2H_5NH_2$  and  $C_6H_5NH_2$ ,

Which of the following reagents(s) is useful?

- A. Hinsberg reagent

B.  $\beta$  – Naphthol

C.  $CHCl_3 / KOH$

D.  $NaOH$

**Answer: B**



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**101.** Oxidation of aniline with acidified potassium dichromate gives

X as one of the product X can be

A. benzoic acid

B. quinol

C. *p* – benzoquinone

D. maleic acid

**Answer: C**



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102. Schiff's bases are formed when aniline reacts with

- A. aromatic aldehydes
- B. aryl ketones
- C. aryl halides
- D. aryl alcoholss

**Answer: A**



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103. Which of the following is formed when  $RNH_2$  reacts with  $RCHO$  ?

- A. Anils

B. Acetals

C. Ketals

D. Imines

**Answer: A**



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**104.** Which of the following will have lowest value of  $pK_b$ ?

A.  $CH_3NH_2$

B.  $(CH_3)_2NH$

C.  $NH_3$

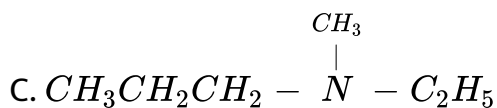
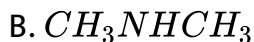
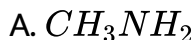
D.  $C_6H_5NH_2$

**Answer: B**



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105. Which of the following amines is optically active ?

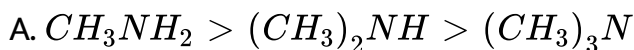


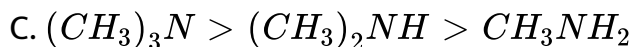
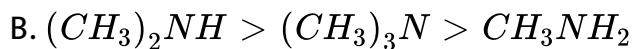
Answer: D



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106. In aqueous solutions, the basic strength of amines decreases in the order

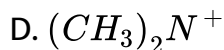
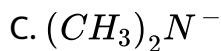
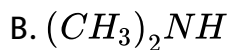




**Answer: D**

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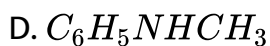
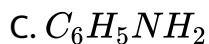
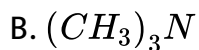
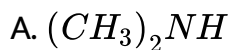
**107.** The conjugate base of  $(CH_3)_2NH_2^+$  is :-



**Answer: B**

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108. Which of the following has the most stable conjugate acid in aqueous medium ?

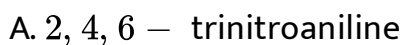


Answer: C



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109. Amongst the following, the strongest base is





B. 2, 4, 6 – trimethylaniline

C. Aniline

D. *N, N* – dimethylaniline

**Answer: B**



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**110.** Which one of the following is least basic ?

A. Aniline

B. Diethylamine

C. *p* – sulphanilic acid

D. *o* – nitroaniline

**Answer: D**



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111. The correct order of basic strength amongst the following compound is



A.  $I > II > III > IV$

B.  $I < IV < III < II$

C.  $IV < I < III < II$

D.  $III < IV < II < I$

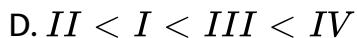
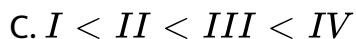
Answer: A



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112. Amongst the compounds, Aniline (I), *o* – nitroaniline (II), *p* – nitroaniline (III) and *m* – nitroaniline (IV), the order of increasing

basicity is



**Answer: B**



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**113.** Which of the following is the most basic ?

A. *p* – phenylenediamine

B. *m* – phenylenediamine

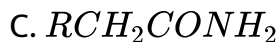
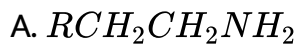
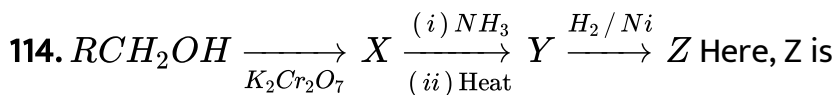
C. aniline

D. *p* – bromoaniline

Answer: A



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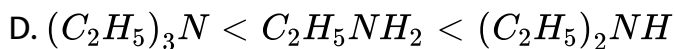
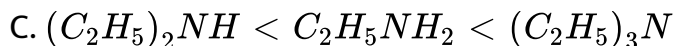
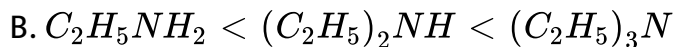
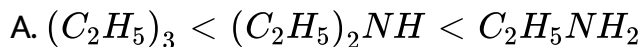


Answer: B



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115. In chlorobenzene solutions, the basic strength of amines increases in the order



Answer: B

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116. Aniline reacts with excess of phosgene and KOH to form



C. 

D. 

**Answer: D**

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**117. Which of the following does not reduce Tollen's reagent ?**

A.  $CH_3CHO$

B.  $HCOOH$

C.  $C_6H_5NHOH$

D.  $C_6H_5NH_2$

**Answer: D**

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118. Nitration of aniline is carried out after acylation because

- A. Acylation deactivates the  $-NH_2$  group
- B. Oxidation can be prevented
- C. *o*- and *p*- products are obtained in good yields
- D. all the three

Answer: D



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119. The  $pK_a$  and  $pK_b$  values of some bases are as follows. Which is strongest base ?

- A.  $pK_b = 9.4$
- B.  $pK_b = 3.32$

C.  $pK_a = 4.0$

D.  $pK_a = 11.1$

**Answer: B**

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**120.** Which of the following is carcinogenic ?

A. Aniline

B. N-nitrosoamine

C. Ethylamine

D. all the three

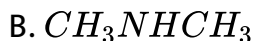
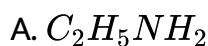
**Answer: B**

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121. A highly volatile carbon compound ( $C_2H_7N$ ) which gives carbonyl amine reaction and is soluble in hydrochloric acid and the solution on treatment with sodium nitrite and HCl gives off nitrogen leaving behind a solution which has an alcoholic smell.

The compound is



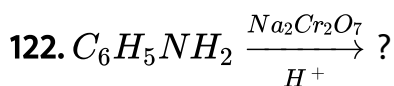
C. both A and B

D. None of these

**Answer: D**



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A.  $C_6H_5CHO$

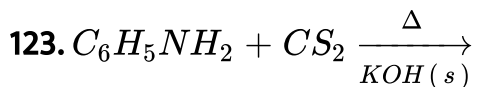
B. 

C. 

D. None

**Answer: D**

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The end product in the reaction is

A. Ethylisothiocyanate

B. Thiophenol

C. Unsym. diphenyl thiourea

D. Sum. diphenyl thiourea

**Answer: D**

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**124.** Aniline on treatment with sodium hypochlorite gives

- A. *p* – Aminophenol
- B. Phenol
- C. Sod. Salt of Aniline
- D. Anilinium chloride

**Answer: A**

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125. On heating aniline with fuming sulphuric acid at  $180^{\circ}\text{C}$ , the compound formed will be

- A. Aniline disulphate
- B. Aniline 2, 4, 6-trisulphonic acid
- C. Sulphanilic acid
- D. None

**Answer: C**



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126. Acetanilide finds application in medicine as as

- A. Hypnotic
- B. Antiseptic

C. Antipyretic

D. Rosenmund's reaction

**Answer: C**



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127. 

X, Y, Z in the above reaction are

A. Cyclohexane, Cyclohexanol, Cyclohexanoic acid

B. Cyclohexane, Cyclohexanone, Adipic acid

C. Cyclohexane, Cyclohexanal, Cyclohexanoic acid

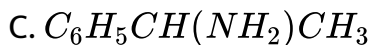
D. Cyclohexane, Cyclohexanone, Cyclohexanoic, Cyclohexanoic  
acid

**Answer: B**



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128. The structural formula of a compound,  $C_6H_{11}N(X)$  that is optically active dissolves in dil. Aq. HCl, and releases  $N_2$  with nitrous acid. The compound X is

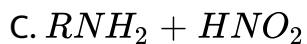
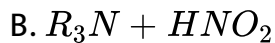
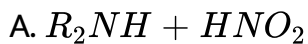


**Answer: C**



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129. Carcinogens are the products of the reaction between



D. None

**Answer: A**



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**130.** The value of  $K_b$  is highest is case of

A. *p* – Methoxyaniline

B. *p* – Chloroaniline

C. *p* – Nitroaniline

D. *p* – Methylaniline

**Answer: A**

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**131.** Aniline when acetylated, the product on nitration followed by alkaline hydrolysis gave

- A. *o* – Nitroacetanilide
- B. *p* – Nitroaniline
- C. *m* – Nitroaniline
- D. Acetanilide

**Answer: B**

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132. When aniline is heated with glacial acetic acid in the presence of anhy.  $ZnCl_2$ , the product formed is

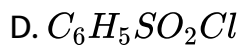
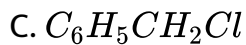
- A. Acetamide
- B. Acetanilide
- C. Phenyl acetamide
- D. Chlorobenzene

**Answer: B**

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133. Hinsberg's reagent is

- A.  $C_6H_5COCl$
- B.  $CH_3COCl$



**Answer: D**

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**134.** *o* – Phenylenediamine has a structure



D. None of these

**Answer: A**

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135. Which of the following is a secondary amine ?

- A. Isopropyl amine
- B. Sec-Butyl amine
- C. N-Methylbutanamine
- D. Diethylaniline

Answer: C



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136. Which of the following are not functional isomers of each other ?



C.  $CH_3CH_2NH_2$  and  $CH_3NHCH_3$

D.  $CH_3CH_2CH_2NH_2$  and  $(CH_3)_2CHNH_2$

**Answer: D**

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**137.** Which of the following represents the correct state of existence of sulphanilic acid ?

A. 

B. 

C. 

D. None of these

**Answer: C**

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**138.** The compound 1 – (N-ethyl -N-methyl) propanamine forms non-superimposable mirror images. But this compound does not show optical activity because of

- A. absence of a chiral N atom
- B. presence of chiral N atom
- C. presence of lone pair on N atom
- D. of rapid flipping one form into the other

**Answer: D**



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**139.** Trimethyl amine has

- A. planar geometry

B. trigonal bipyramidal geometry

C. pyramidal shape

D. octahedral geometry

**Answer: C**



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**140.** Secondary propyl amine is

A. primary amine

B. secondary amine

C. tertiary amine

D. none of these

**Answer: A**



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141.  $p$  – anisidine can be represented by the formula

A. 

B. 

C. 

D. 

Answer: A

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142. Benzene diazonium chloride when reacted with hypophosphorus acid, produces :

A. Benzene

B. Phenol

C. Phenyl isocyanide

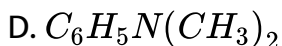
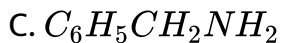
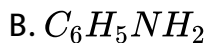
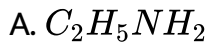
D. Phenyl phosphate

**Answer: A**



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**143.** which of the following amine will form stable diazonium salt at  $273 - 283K$  ?



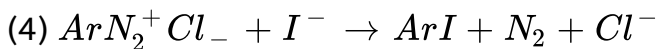
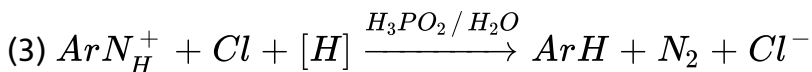
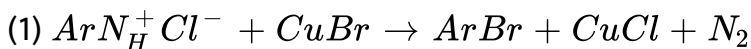
**Answer: B**





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144. Which of the following reactions will occur ?



Select the correct answer using the codes given below

A. 1, 2 and 4

B. 1, 3 and 4

C. 1, 2 and 3

D. 2, 3 and 4

Answer: B



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**145.** When benzene diazonium chloride solution is boiled, it yields

- A. Benzene
- B. Aniline
- C. Phenol
- D. Chlorobenzene

**Answer: C**



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**146.** In laboratory, benzene diazonium chloride is not isolated in the crystalline solid state because in solid state it

- A. explodes
- B. is readily oxidised

C. is readily reduced

D. is polymerised

**Answer: D**



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**147.** Benzene diazonium chloride when reduced with sodium sulphite yields

A. Chlorobenzene

B. Benzene

C. Phenyl hydrazine chloride

D. Phenol

**Answer: C**



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**148.** Benzene diazonium chloride forms orange red dye with

- A. Phenol
- B. Cresol
- C. Resorcinol
- D. All

**Answer: D**



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**149.** During the preparation of arenediazonium salts, the excess of nitrous acid, if any, is destroyed by adding

- A. *Aq. NaOH*

B. *Aq.*  $Na_2CO_3$

C. *Aq.*  $NH_2CONH_2$

D. *Aq.*  $KI$

**Answer: C**



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**150.** When benzenediazonium chloride is warmed with methanol, the product formed is

A. benzene

B. benzenol

C. benzyl alcohol

D. anisole

**Answer: A**



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151. Reduction of benzenediazonium chloride with  $SnCl_2 + HCl$

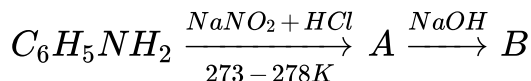
- A. Aniline
- B. Phenylhydrazine
- C. Azobenzene
- D. Hydrazobenzene

**Answer: B**

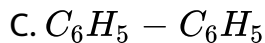
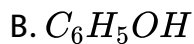


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152. The final product in the following sequence of reaction is



- A.  $C_6H_5N_2Cl$



**Answer: D**

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**153.** Which of the following diazonium salt is most stable ?

A. *p* – Nitrobenzenediazonium chloride

B. 2, 4 – Dinitrobenzenediazonium chloride

C. 2, 4, 6 – Trinitrobenzenediazonium chloride

D. *p* – Methoxybenzenediazonium chloride

**Answer: D**

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154. Benzenediazonium chloride on treatment with  $KCN$  in presence of copper powder gives :

- A. benzene carbonitrile
- B. aniline
- C. benzene
- D. benzanilide

**Answer: A**



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155. Reaction of benzenediazonium chloride with alkaline phenol gives an azo dye. This is an example of



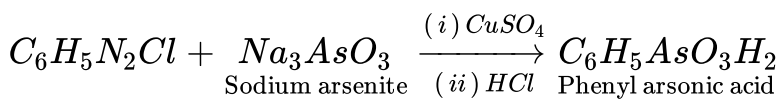
- A. electrophilic substitution
- B. nucleophilic substitution
- C. oxidative coupling
- D. a free radical reaction

**Answer: A**



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**156.** The following reaction represents



- A. Schiemann reaction
- B. Bart reaction
- C. Gomberg reaction
- D. Gattermann reaction

**Answer: A**



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**157.** In laboratory, benzene diazonium chloride is not isolated in the crystalline solid state since in solid state it

A. is readily oxidised

B. explodes

C. is readily reduced

D. is polymerised

**Answer: B**



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158. When benzene diazonium hydrogen sulphate is treated with hypophosphorus acid it forms

- A. phenyl hydrazine
- B. azobenzene
- C. phenol
- D. benzene

**Answer: D**



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159. Which of the following reagents are used in Balz Schieman reaction ?

- A.  $C_6H_5OH$  and  $CO_2$

B. Benzene diazonium chloride and  $HBF_4$

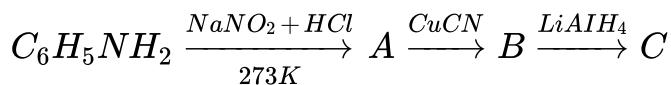
C. Chlorobenzene and chloral

D. Benzene diazonium salt and  $H_3PO_2$

**Answer: B**

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**160.** Identify 'C' in the following sequence :



A.  $C_6H_5NH_2$

B.  $C_6H_5N_2Cl$

C.  $C_6H_5CH_2NH_2$

D.  $C_6H_5CN$

**Answer: C**



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161. 1-Alkyl isocyanide on reduction with  $Zn - Hg / HCl$  gives

- A.  $1^\circ$  Amines
- B.  $3^\circ$  Amine
- C. N-Alkylalkanamine
- D. N-Methylalkanamine

Answer: D



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162. The IUPAC name of  $CH_2 = CHCN$  is

- A. Vinyl nitrile

B. Vinyl cyanide

C. Prop-2-ene nitrile

D. Cyanoethane

**Answer: C**



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**163.** Ethanol on treatment with ethanenitrile in the presence of conc.  $H_2SO_4$  followed by hydrolysis will yields

A. Ethyl ethanoate

B. Butyraldehyde

C. Methyl propanoate

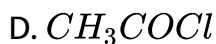
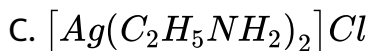
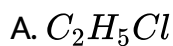
D. 2- Butanone

**Answer: A**



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**164.** The precipitate formed by mixing silver nitrate and sodium chloride disappears on adding ethylamine. It is due to the formation of



**Answer: C**



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165. Which of the following reagent on treatment with benzamide produces benzene isonitrile ?

- A. Dichloromethane
- B. Carbon tetrachloride
- C. Trichloromethane and KOH
- D.  $CH_3Cl / KOH$

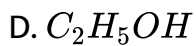
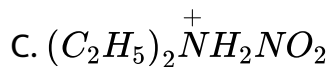
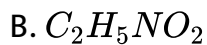
Answer: D

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166. When diethylamine is shaken with the cold solution of  $NaOH_2 / HCl$  the product formed will be

- A.  $(C_2H_5)_2, NNO$





**Answer: A**

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**167.** The main product of reduction of nitrobenzene with lithium aluminium hydride is

A. Azoxybenzene

B. Aniline

C. Azobenzene

D. Diazonium salt

**Answer: C**



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168. An alkyl cyanide on alkaline hydrolysis using  $H_2O_2/OH^-$  produces

- A. Alkyl amine
- B. Aldehydes
- C. Ketone
- D. Alkanamide

**Answer: D**



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169. Acetone  $\xrightarrow{NH_2OH}$  X  $\xrightarrow{LiAlH_4}$  Y. In the above sequence Y is

- A. tertiary amine

- B. secondary amine
- C. primary amine
- D. 2-amino propane.

**Answer: D**



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**170.** Treatment of ethyl amine and methyl magnesium halide produces a gaseous substance X. X is

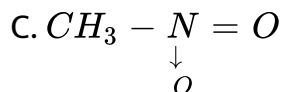
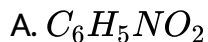
- A. Ethane
- B. Ammonia
- C. Methane
- D. Propane

**Answer: C**



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171. Which of the following is not a nitroderivative ?



Answer: D



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172. The oxidation of aniline with  $K_2Cr_2O_7 / H_2SO_4$  produces mainly

A. Nitrobenzene

B. Benzoic acid

C. *p* – Benzo quinone

D. Benzamide

**Answer: D**



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**173.** Which of the following does not represent functional isomers of each other ?

A.  $CH_3CH_2NO_2$  and  $CH_3CH_2O - N$

B.  $C_6H_5CHO$  and  $CH_3COCH_3$

C.  $CH_3CH_2CH_2NH_2$  and  $(CH_3)_3N$

D.

**Answer: C**



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**174.** In order to produce ethyl isothiocyanate, which of the following reagents are required

- A. Ethylamine and sulphur
- B. Ethanamide and sulphur
- C. Ethyl carbylamine and sulphur
- D. Ethyl cyanide and sulphur

**Answer: C**



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175. Which of the following on treatment will yield azoxybenzene from nitrobenzene ?

A. electrolysis in acidic condition

B.  $\text{NaOH} / \text{Zn}, \text{CH}_3\text{OH}$

C.  $\text{Sn} / \text{HCl}$

D.  $\text{Na}_3\text{AsO}_3 / \text{NaOH}$

Answer: D



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176. The hybrid states of carbon atoms 1 and 2 in ethanenitrile are

A.  $sp^3, sp^2$

B.  $sp, sp^3$

C.  $sp^3$ ,  $sp$

D.  $sp^2$ ,  $sp$

**Answer: B**

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**177.** The total number of  $\pi$  bonds in the structure of but-2-en-1, 4-dinitrile is

A. Five

B. four

C. Three

D. Two

**Answer: A**

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178. Methyl carbamine is treated with ozone, the product is

- A. Formic acid
- B. Formic acid and methylamine
- C. Methyl isocyanate
- D. Formalimine

**Answer: C**

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179. In which of the following the nitration will be most easy?

- A. Toluene
- B. Nitrobenzene

C. Chlorobenzene

D. Benzene sulphonic acid

**Answer: A**

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**180.** During coupling reaction of benzene diazonium chloride and aniline the  $pH$  of the reaction medium should be

A. 1 – 2

B. 9 – 10

C. 4 – 5

D. 7 – 8

**Answer: C**

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181. Which of the following will respnd to carbyl amine test ?

- A. N-methylaniline
- B. *p* – Toluidine
- C. Phenyl – *n* – butyl amine
- D. *N, N* – Diethylaniline.

Answer: B



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182. Pick up the false statement

- A.  $NH_3$  is more basic than diphenyl amine
- B. A base with a higher value of  $pK_b$  is a stronger base

C. Pseudo nitrol gives blue colour with  $NaOH$

D. A base with a lower  $pK_b$  is a stronger base.

**Answer: B**



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**183.** A compound X is formed when acetaldehyde condenses with ethyl amine. X on further catalytic hydrogenation ( $H_2/Ni$ ) will yield

A. Ethyl methyl amine

B. Diethyl amine

C. n-Butyl amine

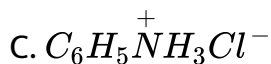
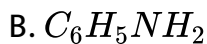
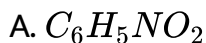
D. Trimethyl amine.

**Answer: B**



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**184.** The most reactive compound out of the following towards electrophilic substitution of the ring is

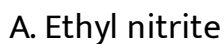


**Answer: B**



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**185.** Sweet spirit of nitre is



B. Nitrobenzene

C. Chlorobenzene

D. Trimethyl amine.

**Answer: B**



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**186.** Treatment of aniline with bromine water produces

A. 2, 4, 6-tribromoaniline

B. Mixture of ortho and para bromoaniline

C. Bromobenzene

D. N-Bromoaniline.

**Answer: A**



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187. The gas evolved on reaction of ethyl amine with sodium metal

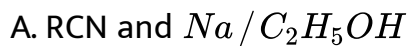


Answer: C



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188. Which reactants are involved in Mendius reaction ?



C. RCN and  $Zn / NH_4Cl$

D. RCN and  $SnCl_2 / HCl$ .

**Answer: A**



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**189.** Which of the following reagents can distinguish primary amines and secondary amines ?

A.  $NH_3$

B.  $NaNO_2 / HCl$

C.  $HCl$

D. all the above.

**Answer: B**



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190. How many structural isomers are possible from molecular formula  $C_3H_9N$

- A. one
- B. two
- C. three
- D. four.

Answer: D

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191. The number of  $1^\circ$  amines with four carbon and pertaining to formula  $C_nH_{2n+3}N$  is

- A. 4

B. 3

C. 2

D. one.

**Answer: A**



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**192.** Which of the following will not give dinitrogen gas with nitrous acid ?

A. Propanamine

B. Ethanamine

C. Trimethylamine

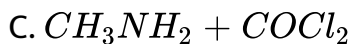
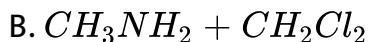
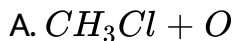
D. Isopropylamine.

**Answer: C**



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193. Which combination will give methyl isocyanate ?

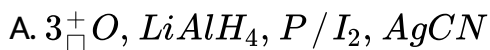


Answer: C



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194. Which of the following of the following sequence will convert methyl cyanide to ethyl isocyanide ?



B.  $LiAlH_4$ ,  $NaNO_2$  /  $HCl$ ,  $KCN$

C.  $H_3O^+$ ,  $NH_3$ ,  $P_2O_5$

D. none of the above.

**Answer: A**



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**195.** Tertiary nitroalkane cannot tautomerise because

A. their tautomer forms are highly unstable

B. they do not contain any multiple bond

C. they do not have labil hydrogen

D. they are not basic in nature.

**Answer: C**



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**196.** Acetone is treated with hydroxylamine and the derivative so formed is subjected to catalytic hydrogenation. Final product is

- A. Isopropylamine
- B. Methanamine
- C. Trimethylamine
- D. Propylamine

**Answer: A**



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**197.** In the resonating structure of aniline, the number of  $\sigma$  and  $\pi$  bonds are respectively

A.  $12, \sigma, 3\pi$

B.  $14\sigma, 3\pi$

C.  $6\sigma, 6\pi$

D.  $3\sigma, 3\pi$ .

**Answer: B**



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**198.** The order of increasing basic strength among m-toluidine (I), p-toluidine (II) and o-toluidine (III) is

A.  $III < II < I$

B.  $II < III < I$

C.  $III < I < II$

D.  $II < I < III$ .

Answer: C



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199. Deep blue colour formed by addition of copper (II) sulphate solution to ethylamine is due to formation of

A. free  $Cu^{2+}$  ions in solution

B.  $(NH_4)_2SO_4$

C.  $[Cu(C_2H_5NH_2)_4]^{2+}$  ions

D.  $Cu(OH)_2$ .

Answer: C



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200. Which of the following is obtained when aniline is treated with conc.  $HNO_3$  ?

- A. o- and p- nitroaniline
- B. m-nitroaniline
- C. nitrobenzene
- D. a black tarry material.

**Answer: D**



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201. Which process is most suitable for getting primary amine from alkyl isocyanide ?

- A. Reduction with  $H_2 / Pt$



B. Reduction with  $Zn/HCl$

C. Acidic hydrolysis

D. none of the above.

**Answer: C**

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202. Acetoxime on reduction with  $LiAlH_4$  produces

A. 1 – Propanamine

B. 2 – Propanamine

C. Ethanamine

D. Ethane nitrile

**Answer: A**

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203. In which of the following compounds the lone pair is not delocalised over the benzene ring ?

- A. *p* – toluidine
- B. Anilinium hydrogen sulphate
- C. Aniline
- D. *p* – nitroaniline

**Answer: B**

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204. The substance which gives benzamide on alkaline hydrolysis and can be obtained from benzamide by treatment with  $SOCl_2$  is

- A. Benzonitrile
- B. Benzamine
- C. Benzyl amine
- D. Benzyl nitrile

**Answer: A**



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**205.** Which of the following compounds will give methyl organe by the reaction with give methyl organe by the reaction with diazonium salt of sodium *p* – amino benzene sulphonate ?

- A. Aniline
- B. *N, N* – Dimethyl aniline
- C. *m* – nitro aniline

D. *m* – bromophenol

**Answer: B**



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206. Which of the following will not give coloured dye with benzene diazonium chloride ?

A. 

B. 

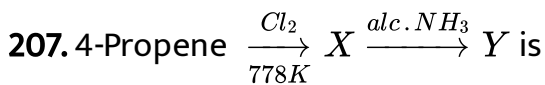
C. 

D. 

**Answer: B**



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- A. Allylamine
- B. *n* – Propylamine
- C. 1, 2-Diaminopropane
- D. 2-Phenyl ethylamine

**Answer: A**

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- A.  $1^\circ$  Amines
- B.  $2^\circ$  Amines
- C. Alkyl cyanate

D. Alkyl isocyanate.

**Answer: D**

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**209.** Which of the following is used to prepare aniline from chlorobenzene by reaction with ammonia ?

A. *Cu*

B. *Cu<sub>2</sub>O*

C. *Ni*

D. *Pt*

**Answer: B**

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210. Dipole moments of alkyl cyanides and alkyl isocyanides are related as

A.  $\mu_{RCN} = \mu_{RNC}$

B.  $\mu_{RCN} > \mu_{RNC}$

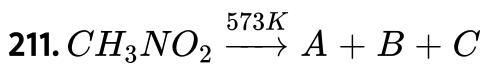
C.  $\mu_{RCN} < \mu_{RNC}$

D. Unpredictable

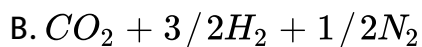
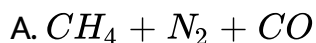
Answer: B

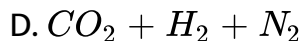
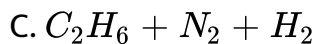


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In this reaction, the products are





**Answer: B**

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212. Which of the following reagents can be used to convert benzene diazonium chloride to benzene ?

A. Phosphorus acid

B. Phosphoric acid

C. Hypophosphoric acid

D. Metaphosphoric acid.

**Answer: C**

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213. Benzoyl chloride reacts with benzenamine in the presence of a base to form

- A. Benzamide
- B. Hydrobenzamide
- C. N-Phenylethanamide
- D. N-Phenylbenzamide

**Answer: D**

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214. Which reagent can provide distinction between aliphatic  $-NH_2$  group and aromatic  $-NH_2$  group?

- A. Benzene diazonium chloride

B. Benzene sulphonyl chloride

C.  $CHCl_3 / KOH$

D.  $CH_3COCl$

**Answer: A**



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215. The correct increasing order, of basic strength among *p* – nitroaniline (I), *p* – bromoaniline (II), *p* – toluidine (III) is

A.  $I < II < III$

B.  $III < II < I$

C.  $II < I < III$

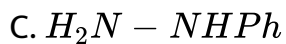
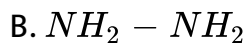
D.  $III < I < II$

**Answer: A**



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216. Which of the following cannot act as nucleophilic species ?



D. Hydroxyl amine hydrochloride

Answer: D



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217. Ethyl nitrite on reduction with Sn/HCl gives:

A. Ethanol, hydroxylamine

B. Ethanol, hydrochloride, ammonium hydroxide

C. Ethanal,  $NH_2OH$

D.  $C_2H_5OH$ ,  $H_2O$

**Answer: A**

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**218.** An organic compound X reacts with nitrous acid to form *N* – methyl – *N* – nitrosoethanamine. X can be obtained by reduction of

A. Propanenitrile

B. Acrylonitrile

C. Methyl isocyanate

D. Ethyl isocyanide

Answer: D

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219. Which of the following is not correctly named ?

A.  $NH_2 - [CH_2]_3 - NH_2$ , 1, 3 – Diaminopropane or

trimethylene diamine

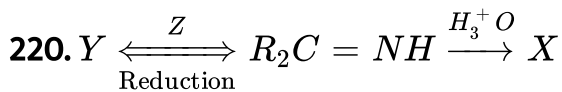
B.  $C_6H_5 - N(CH_3)_2$ , N-phenyl methylamine

C.  $CH_3 - NH - [CH_2]_2NH - CH_3$  2, 5-Diazohexane

D. 

Answer: B

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In the above sequence of reactions X, Y and Z are

- A. aldehyde, ketone,  $NH_3$
- B. ketone,  $1^\circ$  amine,  $KMnO_4$
- C. ketone,  $2^\circ$  amine,  $KMnO_4$
- D. ketimine,  $1^\circ$  amine,  $NH_3$

**Answer: B**

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221. Which of the following is picramide ?

A. 

B. 

C. 

D. 

**Answer: B**

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**222.** Among dimethylamine (I), aniline (II) and methylaniline (III), the increasing order of basic strength is

A.  $II < III < I$

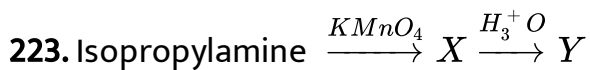
B.  $I < III < II$

C.  $III < I < II$

D.  $II < I < III$

**Answer: A**

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In the above sequence X and Y are

- A. Acetaldimine, ethanal
- B. Ethanal, ketimine
- C. Ketimine, acetone
- D. Acetone, propan-2-ol

**Answer: C**

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## REVISION QUESTION

1. Ethyl amine on oxidation in the presence of  $KMnO_4$  gives



A. An aldehyde

B. An acid

C. An alcohol

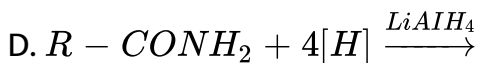
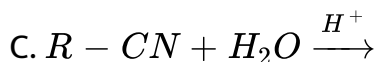
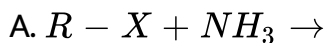
D. An N-oxide

**Answer: D**



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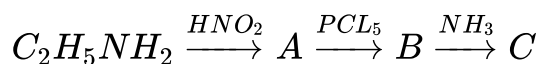
2. Which of the following reactions does not yield an amine ?



**Answer: C**

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**3. Determine the end product of the following reactions**

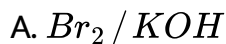


- A. Ethyl cyanide
- B. Ethylamine
- C. Methylamine
- D. Acetamide

**Answer: B**

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4. Primary and secondary amines can be distinguished by



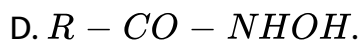
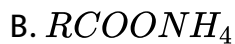
**Answer: C**



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5. Indicate which nitrogen compound amongst the following would undergo Hoffmann reaction (i.e., reaction with  $Br_2$  and strong (KOH) to furnish the primary amine ( $R - NH_2$ ))





**Answer: C**



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**6. Hydrolysis of benzonitrile gives**

A. Benzylamine

B. Aniline

C. Benzoic acid

D. Benzene

**Answer: C**



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7. When a primary amine is treated with  $CS_2$  in presence of  $HgCl_2$ , the product formed is

- A. alkyl cyanate
- B. alkyl isothiocyanate
- C. carbyl amine
- D. alkyl cyanide

**Answer: B**



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8. Pick up the correct statement

- A. Boiling points of alkyl halides are more than corresponding alkane
- B. In water solubility of  $CH_3OH > C_2H_5OH > C_6H_5OH$
- C.  $C_6H_5NH_2$  is weaker base than  $NH_3$
- D. All the above statements are correct.

**Answer: D**

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9. Which of the following amine will not respond to carbylamine reaction ?

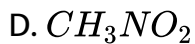
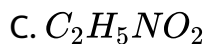
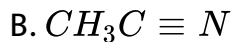
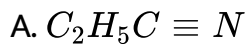
- A. Ethylamine
- B.  $(CH_3)_2NH$
- C.  $CH_3NH_2$

D. Phenylamine

**Answer: B**

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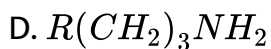
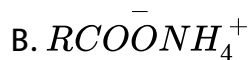
10. Structural formula of ethanenitrile is



**Answer: B**

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11. Which of the following is produced by reaction of RCN in sodium and alcohol ?



Answer: C



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12. The substance that gives a primary amine on hydrolysis is

A. Nitroparaffins

B. Alkylcyanide



C. Oxime

D. Alkylisocyanide

**Answer: D**

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**13.**  $C_3H_9N$  cannot represent

A.  $1^\circ$  amine

B.  $2^\circ$  Amines

C.  $3^\circ$  amine

D. quaternary salt

**Answer: D**

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14. Tertiary nitro compounds cannot show tautomerism because :

- A. they are very stable
- B. isomerise to give sec. nitro compounds
- C. do not have labile hydrogen atom
- D. they are highly reactive.

**Answer: C**

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15. Acetoxime on catalytic hydrogenation gives

- A. 1 – Propanamine
- B. Isopropylamine
- C. Ethyl methyl amine

D.  $CH_4$  and ethanamine

**Answer: B**



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16. Which of the following statement is correct ?

A. Methylamine is less basic than ammonia

B. Methylamine is more basic than  $NH_3$

C. Methylamine is acidic towards litmus

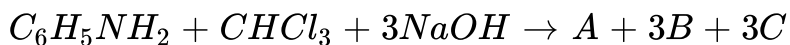
D. Methylamine forms salt with  $NaOH$

**Answer: B**



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17. In the following reaction :



The product A is

- A. Phenyl isocyanide
- B. Phenylcyanide
- C. Ethylenedene chloride
- D.  $HCl$  or  $H_2O$

**Answer: A**

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18. Diazo coupling is useful to prepare

- A. Pesticides

B. Dyes

C. Proteins

D. Vitamins

**Answer: B**



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**19. Ketones and  $1^\circ$  amines form**

A. Amides

B. Oximes

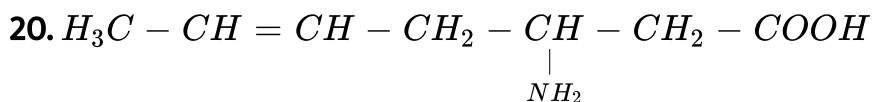
C. Urea

D. Anils.

**Answer: D**



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The IUPAC name of the above compound is

- A. 5-Amino-hex-2-en carboxylic acid
- B. 5-Amino-2-heptenoic acid
- C. 3-Amino-5-heptenoic acid
- D.  $\beta$  - Amino-8-heptenoic acid

**Answer: C**



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21. The reaction,



example of

- A. Nucleophilic substitution
- B. Electrophilic substitution
- C. Free radical substitution
- D. Electrophilic addition

**Answer: A**



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22. Aniline reacts with concentrated  $HNO_3$  to give

A. 

B. 

C. 

D. 

**Answer: C**

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**23.** *p* – Nitrotoluene on further nitration gives

A. 

B. 

C. 

D. 

**Answer: A**

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24. Identify X in the sequence given below:



A.

B.

C.

D.

**Answer: A**

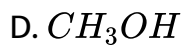
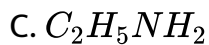


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25. Which of the following on hydrolysis forms acetic acid?

A.  $CH_3CN$

B.  $C_2H_5OH$



**Answer: A**



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**26.** The colour of *p* – aminoazobenzene is

A. Orange

B. Congo red

C. Bismark brown

D. Indigo

**Answer: A**



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27. Acetaldoxime reacts with  $P_2O_5$  to give

- A. Methyl cyanide
- B. Ethyl cyanate
- C. Ethyl cyanide
- D. Mixture of all these

**Answer: A**



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28. Arrange the following :

$CH_3NH_2(I)$ ,  $(CH_3)_2NH(II)$ ,  $C_6H_5NH_2(III)$  and  $(CH_3)_3N(IV)$

in increasing order of basicity in aqueous medium

A.  $II < I < IV < III$

B.  $III < IV < I < II$

C.  $I < II < III < IV$

D.  $II < III < I < IV$

**Answer: B**



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29. When primary amine is heated with  $CS_2$  in presence of excess mercuric chloride, it gives isothiocyanate. This reaction is called.

A. Hoffmann Bromoamide reaction

B. Hoffmann mustard oil reaction

C. Perkin's condensation

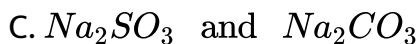
D. Hoffmann elimination reaction

**Answer: B**



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30. If N and S elements are present in organic compound, then during Lassaighe's test both change into



**Answer: B**



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31. Which of the following is least alkaline ?



B. 

C. 

D. All are equal basic

**Answer: A**



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32.  $C_6H_5C \equiv N$  and  $C_6H_5N \equiv C$  exhibit which type of isomerism

A. Position

B. functional

C. enantimerism

D. functional as well as tautomerism

**Answer: B**



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33. The compound obtained by heating a mixture of  $1^\circ$  amine and chloroform with ethanolic potassium hydroxide (KOH) is

- A. an alkyl isocyanide
- B. an alkyl isothiocyanate
- C. an amide
- D. an amide and nitro compound

Answer: A

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34. The major product (70 % to 80) of the reaction between *m* – dinitrobenzene with  $(NH_4)_2S_x$  is

A. 

B. 

C. 

D. 

**Answer: B**



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**35.** A Beckmann rearrangement is effected b

A. Sulphuric acid

B. Polyphosphoric acid

C.  $PCl_5$

D. Any of the above.

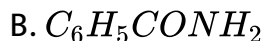


Answer: A

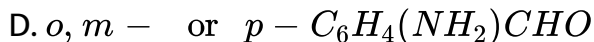


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36. A compound A has a molecular formula  $C_7H_7NO$ . On treatment with  $Br_2$  and  $KOH$ , A gives an amine B which gives carbylamine test. B upon diazotisation and coupling with phenol gives as azody. A can be



C.



Answer: B



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37. Dye test can be used to distinguish between

- A. Ethylamine and acetamide
- B. Ethylamine and aniline
- C. Urea and acetamide
- D. Methylamine and ethylamine

**Answer: B**

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38. Aniline on heating with conc.  $HNO_3$  + conc.  $H_2SO_4$  mixture yields

- A. *o* – and *p*-Nitroanilines
- B. *m* – Nitroaniline

C. A black tarry matter

D. No reaction

**Answer: C**

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**39.** Oxidation of aniline with manganese dioxide and sulphuric acid produces

A. Phenylhydroxylamine

B. Nitrobenzene

C. *p* – Benzoquinone

D. Phenol

**Answer: C**

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40. The electrolytic reduction of nitrobenzene in strongly acidic medium produces .

- A. Azoxybenzene
- B. Aniline
- C. Phenylhydroxylamine
- D. *p* – Aminopheneol

**Answer: D**

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41. The reaction of nitrobenzene with zinc and alkali results in the formation of

- A. Aniline

B. Hydrazobenzene

C. Nitrosobenzene

D. Phenyl hydroxylamine

**Answer: B**



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**42. Which one gives carbylamine reaction ?**

A.  $CH_3NH_2$

B.  $C_2H_5NO_2$

C.  $CH_3CONH_2$

D.  $(CH_3)_2NH$

**Answer: A**



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43. On reduction secondary amine is given by

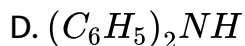
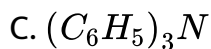
- A. Nitrobenzene
- B. Methyl cyanide
- C. Nitroethane
- D. Methyl isocyanide

Answer: D

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44. The one which is the least basic

- A.  $NH_3$
- B.  $C_6H_5NH_2$



**Answer: C**

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**45.** Nitroso amines ( $R_2N - N = O$ ) are soluble in water on heating them with concentrated  $H_2SO_4$  they give secondary amines. The reaction is called

A. Libermann nitroso reaction

B. Etard's reaction

C. Fries' reaction

D. Perkin's reaction

**Answer: A**



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46. In the presence of acid, the hydrolysis of methyl cyanides gives

- A. Methanoic acid
- B. Ethanoic acid
- C. Methylamine
- D. Methyl alcohol

**Answer: B**



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47. The compound which on reaction with cold nitrous acid gives oily nitrosoamine is

- A. Methylamine



B. Dimethylamine

C. Trimethylamine

D. Triethylamine

**Answer: B**

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**48.** Which of the following compound gives dye test ?

A. Aniline

B. Methylamine

C. Diphenyl amine

D. Ethylamine

**Answer: A**

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49. Reaction of nitrous acid with aliphatic primary amine in the cold gives

- A. A diazonium salt
- B. An alcohol
- C. A nitrile
- D. A dye

**Answer: B**



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50. Gabriel synthesis is used for the preparation of

- A.  $1^\circ$  Aromatic amines

B. 1° Aliphatic amines

C. 2° Amines

D. Tertiary amines.

**Answer: B**



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**51. Piperidine is**

A. Homocyclic compound

B. Heterocyclic aromatic compound

C. Heterocyclic alicyclic compound

D. Acyclic compound

**Answer: C**



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52. In the diazotisation of aniline with sodium nitrite and hydrochloric acid, an excess of hydrochloric acid is used primarily to

- A. suppress the concentration of free aniline
- B. suppress the hydrolysis of nitrous acid
- C. ensure a stoichiometric amount of nitrous acid
- D. neutralise the base liberated.

**Answer: B**

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53. Aniline is reacted with bromine water and the resulting product is treated with an aqueous solution of sodium nitrite in presence

of hydrochloric acid The compound so formed is converted into a tetrafluoroborate which is subsequently heated The final product is .

- A. *p* – bromofluorobenzene
- B. *p* – bromoaniline
- C. 2, 4, 6 – tribromofluorobenzene
- D. 1, 3, 5 – tribromobenzene

**Answer: C**

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**54.** Reduction of nitrobenzene in the presence of  $Zn/NH_4Cl$  gives

- A. Hydrazobenzene

B. N-Phenyl hydroxylamine

C. Aniline

D. Azobenzene

**Answer: B**

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55. Hydrolysis of acetonitrile in acid medium given

A.  $CH_3CH_2OH$

B.  $CH_3COOH$

C.  $CH_3NC$

D.  $CH_3CHOH$ .

**Answer: B**

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56. Which one of the following does not participate in the acrylamine reaction ?

A. KOH

B. Ethanol

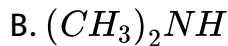
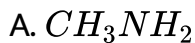
C. Chloroform

D. Aniline.

**Answer: B**

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57. The amine which does not react with acetyl chloride is or which of the following cannot be acetylated



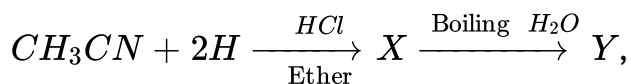
D. None of these.

**Answer: C**



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**58.** In the reaction



the term Y is

A. acetone

B. ethanamine

C. acetaldehyde



D. dimethylamine.

**Answer: C**



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59. Phenyl isocyanides are prepared from which of the following reactions ?

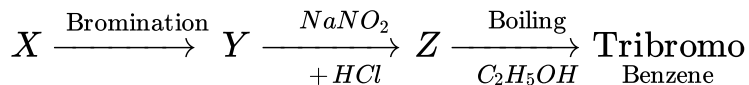
- A. Rosenmund's reaction
- B. Carbylamine reaction
- C. Reimer-Tieman reaction
- D. Wurtz reaction.

**Answer: B**



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60. In the following reaction, X is



- A. Benzoic acid
- B. Salicylic acid
- C. Phenol
- D. Aniline.

Answer: D



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61. Which of the following reaction will not give primary amine ?





**Answer: C**

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**62.** How many isomeric forms of  $C_7H_9N$  contain a benzene ring ?

A. 4

B. 5

C. 6

D. 7

**Answer: B**

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63. In amines, the hybridisation state of N is

A.  $sp$

B.  $sp^2$

C.  $sp^3$

D.  $sp^2d$ .

Answer: C

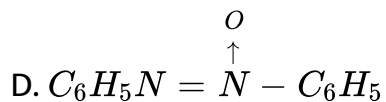
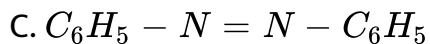


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64. In the reduction of nitrobenzene, which of the following is the intermediate ?

A.  $C_6H_5N = O$

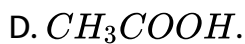
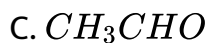
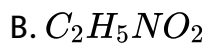
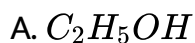
B.  $C_6H_5NH - NH - C_6H_5$



**Answer: A**

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65. On reaction with  $HNO_2C_2H_5NH_2$  produces .



**Answer: A**

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66. Reaction of aniline with acetyl chloride in the presence of  $NaOH$  gives .

- A. acetanilide
- B. p-chloroaniline
- C. a red dye
- D. aniline hydrochloride.

**Answer: A**

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67.  $C_3H_9N$  cannot represent

- A.  $1^\circ$  amine
- B.  $2^\circ$  Amines

C. 3° amine

D. quaternary salt.

**Answer: D**

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**68.** Compound A on reduction gives B which on further reaction with  $CHCl_3$  and alcoholic  $KOH$  gives compound C which of further hydrolysis gives aniline. The compound A is :

A. Nitrobenzene

B. Methylamine

C. nitromethane

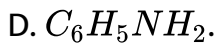
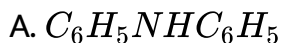
D. Nitrosobenzene.

**Answer: A**



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69. Which of the following compounds cannot be identified by carbyl amine test ?



Answer: A



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70. 

In the sequence given above Z is



A. 

B. 

C. 

D. 

**Answer: B**



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71. 

In the above reaction, X stands for

A.  $SnCl_2$

B.  $Cl$

C.  $NH_2$

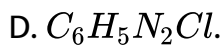
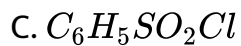
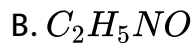
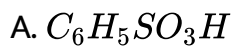
D.  $NH_3^+ Cl^-$ .

**Answer: D**



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**72. What is Hinsberg reagent?**

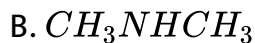
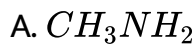


**Answer: C**



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73. Reduction of  $H_3C - NC$  with hydrogen in the presence of  $Ni / Pt$  catalyst gives



**Answer: B**

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74. The electrophile involved in the nitration of benzene is



C.  $NO$

D.  $NO_2^-$

**Answer: B**

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75. Unpleasant smell of carbonylamine is obtained when chloroform and alcoholic KOH are heated with

A. Any aliphatic amine

B. Any amine

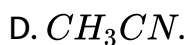
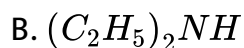
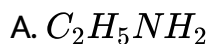
C. Any primary amine

D. Any aromatic amine.

**Answer: C**

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76. A compound that will form an offensive smell when heated with chloroform and alcoholic potash is



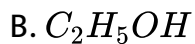
**Answer: A**



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77. Action of  $HNO_2$  on ethylamine gives

A. Ethane



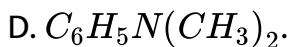
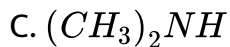
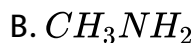
C. ammonia

D. Nitromethane.

**Answer: B**

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**78.** Which of the following is most basic in nature ?



**Answer: C**

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79. Primary nitro compounds react with nitrous acid to form nitrolic acids which dissolve in sodium hydroxide to give

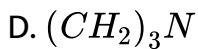
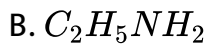
- A. Yellow solution
- B. Blue solution
- C. Colourless solution
- D. Red solution

**Answer: D**

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80. Which is formed when  $(CH_3)_4NOH$  is heated ?

- A.  $CH_3NH_2$

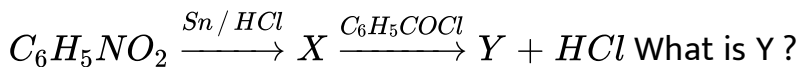


**Answer: C**



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**81.** Consider the following reaction



A. Acetanilide

B. Benzanilide

C. Azobenzene

D. Hydra-azobenzene

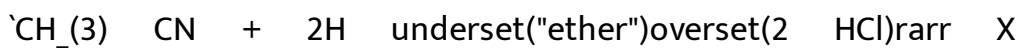
**Answer: B**





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82. In the reaction



$\xrightarrow{\Delta} \text{H}_2\text{O}$  Y. Y is

A. dimethylamine

B. ethanamine

C. acetaldehyde

D. acetone.

**Answer: C**



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83. Nitrobenzene gives azoxybenzene and hydrazobenzene when reduced.

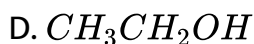
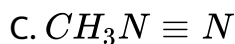
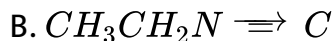
- A. in acidic medium
- B. in neutral medium
- C. electrolytically
- D. in alkaline medium

**Answer: D**

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84. An organic compound 'A' having molecular formula  $C_2H_3N$  on reduction gave another compound 'B' Upon treatment with nitrous acid gave ethyl alcohol and on warming with chloroform and

alcoholic KOH, it formed an offensive smelling compound 'C'. The compound 'C' is :



**Answer: B**



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**85.** When primary amine reacts with chloroform in ethanolic KOH then the product is:

A. an isocyanide

B. an aldehyde

C. a cyanide

D. an alcohol

**Answer: A**

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**86.** Which of the following reagents can be used to convert benzenediazonium chloride into benzene ?

A.  $CH_3OH$

B.  $H_3PO_2$

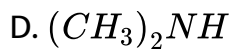
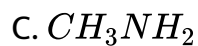
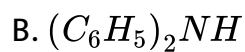
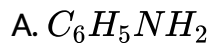
C.  $Br_2 - H_2O$

D.  $LiAlH_4$

**Answer: B**

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87. Which is most basic?



Answer: D

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88. 

The product "P" in the above reaction is

A. 

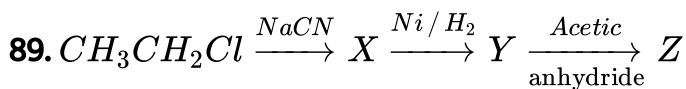
B. 

C. 

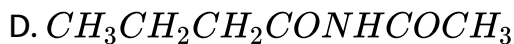
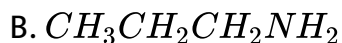
D. 

**Answer: B**

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Z in the above reaction sequence is .



**Answer: A**



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90. A compound 'A' when treated with  $HNO_3$  (in presence of  $H_2SO_4$ ) gives compound B, which is the reduced with  $Sn$  and  $HCl$  to aniline ? The compound 'A' is

- A. Toluene
- B. Benzene
- C. ethane
- D. Acetamide

Answer: B



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91. Reaction of aniline with benzaldehyde is

- A. Substitution
- B. Addition
- C. Condensation
- D. Polymerisation

**Answer: C**



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**92.** The indicator that is obtained by coupling the diazonium salt of sulphanilic acid with N, N-dimethylaniline is

- A. phenanthroline
- B. methyl orange
- C. methyl red
- D. phenolphthalein.



**Answer: B**

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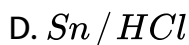
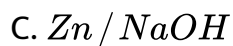
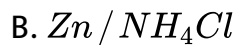
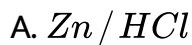
**93.** Nitrobenzene on electrolytic reduction in strongly acidic medium gives

- A. aniline
- B. p-aminophenol
- C. m-nitroaniline
- D. nitrosobenzene.

**Answer: B**

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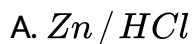
94. The reagent that reacts with nitromethane to form methyl hydroxylamine is



**Answer: B**

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95. The reagent that with nitromethane to form methylhydroxylamine is



B.  $Zn / NaOH$

C.  $Zn / NH_4Cl$

D.  $Sn / HCl$

**Answer: C**



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**96.** The electrolytic reduction of nitrobenzene in strongly acidic medium produces .

A. Aniline

B. Nitrosobenzene

C. m-Nitroaniline

D. p-Aminophenol.

**Answer: D**



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97. Picric acid is:

A. 

B. 

C. 

D. 

Answer: C



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98. On heating benzyl amine with chloroform and ethanolic KOH, product obtained is

A. benzyl alcohol

B. benzaldehyde

C. benzonitrile

D. benzyl isocyanide.

**Answer: D**

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**99.** Ethyl isocyanide on hydrolysis in acidic medium generates:

A. ethylamine salt and methanoic acid

B. propanoic acid and ammonium salt

C. ethanoic acid and ammonium salt

D. methylamine salt and ethanoic acid.

**Answer: A**

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100. Nitrobenzene gives N-phenylhydroxylamine by

- A.  $Sn / HCl$
- B.  $H_2 / Pd - C$
- C.  $Zn / NaOH$
- D.  $Zn / NH_4Cl$ .

Answer: C

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101. Coupling of diazonium salts of following takes place in order



- A.  $IV < II < III < I$ .

B.  $IV > III < II < I$ .

C.  $II < IV < I < III$ .

D.  $I < II < III < IV$ .

**Answer: A**



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**102.** A nitrogen containing organic compound gave an oily liquid on heating with bromine and potassium hydroxide solution. On shaking the product with acetic anhydride, an antipyretic drug was obtained. The reactions indicate that the starting compound is

A. aniline

B. benzamide

C. acetamide

D. nitrobenzene.

**Answer: B**

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**103.** Aniline when diazotized in cold and then treated with dimethyl aniline gives a coloured product. Its structure would be

A. 

B. 

C. 

D. 

**Answer: A**

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104. The strongest base among the following is

A. 

B. 

C. 

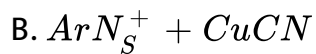
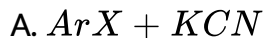
D. 

Answer: C



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105. Aromatic nitriles ( $ArCN$ ) are not prepared by reaction .

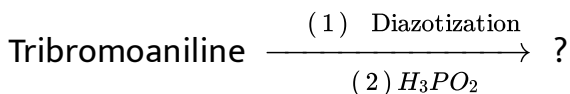




**Answer: A**

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**106.** Identify the product in the following sequence 3, 4, 5-



- A. 3, 4, 5-Tribromobenzene
- B. 1, 2, 3- Tribromobenzene
- C. 2, 4, 6-Tribromobenzene
- D. 3, 4, 5-Tribromonitrobenzene.

**Answer: B**

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107. Among the amines (a)  $C_6H_5NH_2$  (b)  $CH_3NH_2$  (c)  $(CH_3)_2NH$  (d)  $(CH_3)_3N$  the order of basicity is

A.  $a < b < d < c$

B.  $d < c < b < a$

C.  $a > b > c > d$

D.  $b < c < d < a$

Answer: A

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108. Nitration of aniline in strongly acidic medium, results in the formation of m-nitroaniline also. This is because

- A. amino group is meta orienting during electrophilic substitution reaction
- B. nitro group goes always to the meta position irrespective of the substituents.
- C. nitration of aniline is a nucleophilic substitution reaction in strongly acidic medium.
- D. in strongly acidic conditions aniline is present as anilinium ion

**Answer: D**



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**109.** Nitration of aniline is achieved by

- A. Direct treatment with nitration mixture under reflux.

B. Using fuming  $HNO_3$

C. Acetylation followed by nitration and subsequent hydrolysis

D.  $KNO_3$  + conc.  $HNO_3$

**Answer: C**



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**110.** The formation of m-dinitrobenzene by heating nitrobenzene with conc  $H_2SO_4$  is a/an .

A. A conjugate acid base interaction

B. A sulphonation process

C. A Nucleophilic substitution.

D. An electrophilic substitution.

**Answer: D**



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**111.** Electrolytic reduction of nitrobenzene in weakly acidic medium gives .

- A. Aniline
- B. Nitrosobenzene
- C. N-Phenylhydroxylamine
- D. #REF!

**Answer: A**



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**112.** Which of the following chemicals are used to manufacture methyl isocyanate that caused Bhopal Tragedy ?

Methylamine

(ii) Phosgene

(iii) Phosphine (iv) Dimethylamine .

A. (i) And (ii)

B. (iii) and (iv)

C. (i) and (ii)

D. (ii) and (iv).

**Answer: A**

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**113.**  $C_6H_5CONHCH_3$  can be converted into  $C_6H_5CH_2NHCH_3$  by .

A.  $NaBH_4$

B.  $H_2 - Pd/C$ .

C.  $LiAlH_4$ .

D.  $Zn - Hg/HCl$ .

**Answer: C**

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**114.** Pyridine is less basic than triethylamine because :

A. Pyridine has aromatic character.

B. Nitrogen in pyridine is  $sp^2$  – hybridized.

C. Pyridine is a cyclic system

D. In pyridine, lone pair of nitrogen is delocalized.

**Answer: B**

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**115.** Which one of the following methods is neither meant for the synthesis nor for separation of amines ?

- A. Hinsberg method
- B. Hoffmann method
- C. Wurtz reaction
- D. Curtius reaction.

**Answer: C**

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**116.** Amongst the following the most basic compound is :

- A. benzylamine

B. aniline

C. acetanilide

D. p-nitroaniline.

**Answer: A**

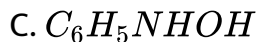
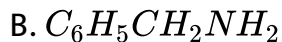
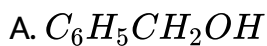


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**117.** Aniline in a set o reactions yield a product D



The structure of the product D would be



**Answer: A**



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**118.** Reaction of cyclohexanone with dimethylamine in the presence of catalytic amount of an acid forms a compound if water during the reaction is continuously removed. The compound formed is generally known as

- A. an enamine
- B. a Schuff's base
- C. an amine
- D. an imine.

**Answer: A**



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119. 

In the above sequence, II is

- A.  $\beta$ -alanine
- B.  $\alpha$ -alanine
- C. ethylenediamine
- D.  $\gamma$ -aminobutyric acid.

**Answer: A**



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120. In the following reaction



The organic product X is

- A. 

B. 

C. 

D. 

**Answer: C**



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**121.** The amine which will not liberate nitrogen on reaction with nitrous acid is

A. tri-methylamine

B. ethylamine

C. sec-butylamine

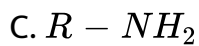
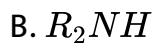
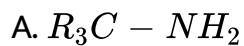
D. t-butylamine

**Answer: A**



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122. Which has highest  $pK_a$  value



**Answer: D**



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123. 

A. 

B. 

C. 

D. 

**Answer: B**

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124. 

A.  $Na_2S$

B.  $Sn / HCl$

C.  $LiAlH_4$ .

D. all of these.

**Answer: A**

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125. Treatment of cyclobutyl methylamine with nitrous acid does not give

A. 

B. 

C. 

D. 

**Answer: D**



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126. 

The compound X and Y are



A. 

B. 

C. 

D. 

**Answer: B**



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127. 

A. 

B. 

C. 

D. 

**Answer: B**



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**128.** Which of the following gives a yellow oily liquid with nitrous acid

- A. Methylamine
- B. Aniline
- C. Dimethylamine
- D. Tri-methyl amine.

**Answer: C**



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129. Among the following compounds, most basic is

- A. Aniline
- B. Acetanilide
- C. p-nitro
- D. Benzylamine.

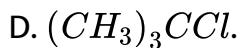
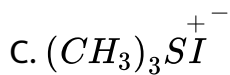
Answer: D



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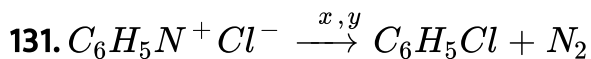
130. A compound that will react most readily with NaOH to form methanol is

- A.  $(CH_3)_4N^+I^-$
- B.  $CH_3OCH_3$

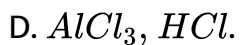
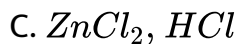
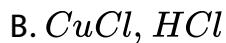
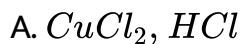


**Answer: A**

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x and y in the above reaction are



**Answer: B**

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132. Which of the following exists as a zwitter ion ?

A. p-aminophenol

B. salicylic acid

C. sulphanilic acid

D. Ethanol amine

Answer: C

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133. How many primary amines including stereoisomers are possible for the molecular formula  $C_4H_{11}N$ .

A. 1

B. 2

C. 3

D. 4

**Answer: D**



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**134.** When nitrobenzene is reduced with zinc and methanolic NaOH the product obtained is .

A. aniline

B. phenyl hydroxylamine

C. p-amine phenol

D. azo benzene

**Answer: D**



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135. Which of the following compounds will exhibit optical isomerism ?

A. tert Butyl amine

B. sec Butyl amine

C. isobutyl amine

D. n-Butylamine.

**Answer: B**



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136. Ethylamine can be prepared by the action of bromine and caustic potash on

- A. Acetamide
- B. Propionamide
- C. Formamide
- D. Methyl cyanide.

**Answer: B**



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**137.** Choose the amide which on reduction with  $LiAlH_4$  yields a secondary amine

- A. Ethanamide
- B. N-Methyl ethamide
- C. N, N-dimethylethanamide
- D. Phenyl methanamide



**Answer: B**



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**138.** Arrange the following amines in the decreasing order of their basic strength Aniline (I), Benzylamine (II), p-toluidine (III)

A.  $I > II > III$

B.  $III > II > I$

C.  $II > I > III$

D.  $III > I > II$

**Answer: A**



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139. Amino group is ortho, para-directing for electrophilic substitution on nitration of aniline good amount of m-nitroaniline is added. This is due to

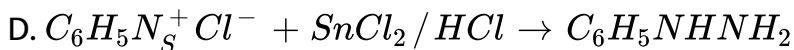
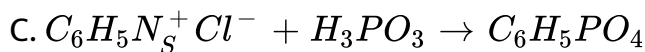
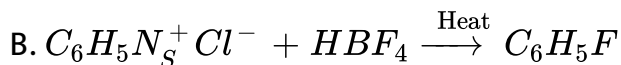
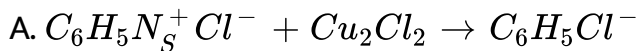
- A. In nitration mixture, ortho, para-activity of  $NH_2$  group is completely lost
- B.  $-NH_2$  becomes  $-NH_3^+$ , which is meta directing
- C.  $-NH_2$  becomes  $-NH^+ 4O^-$ , which is m-direction
- D.  $-NH_2$  becomes  $-NH^- NO_2^+$ , which is m-direction.

Answer: B



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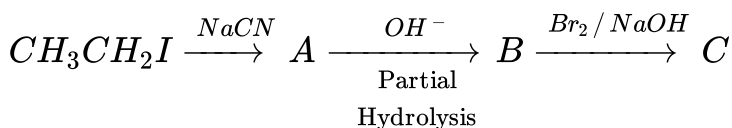
140. Which one of the following is not the correct reaction of aryldiazonium salts ?



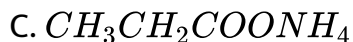
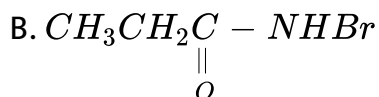
Answer: C

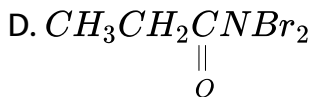
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141. Given the following sequence of reaction



The major product 'C' is

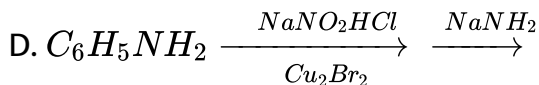
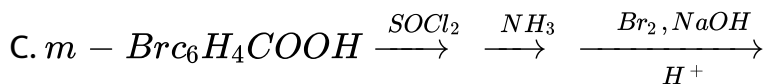
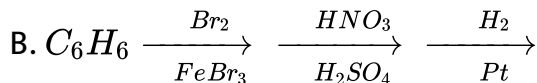
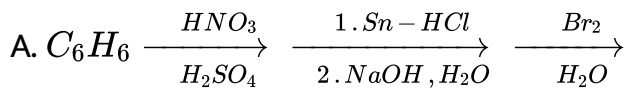




Answer: A

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142. m- bromoaniline can be prepared by .



Answer: C

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143. Which one of the following is called a carbylamine

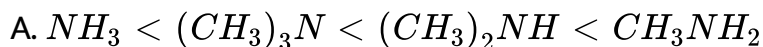


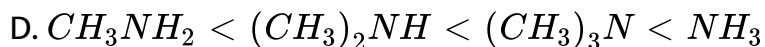
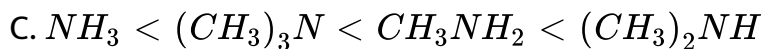
Answer: D



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144. Arrange the following in the increasing order of their basic strength  $CH_3NH_2$ ,  $(CH_3)_2NH$ ,  $(CH_3)_3N$ ,  $NH_3$

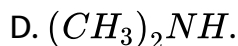
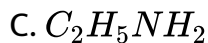
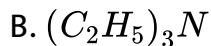
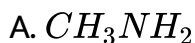




**Answer: B**

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**145.** From the following compounds which does not react with



**Answer: B**

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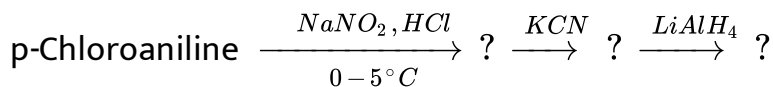
146. Primary, secondary and tertiary amines can be distinguished by

- A. Schiff's test
- B. Fehling's test
- C. Tollen's test
- D. Hinsberg's test.

Answer: D

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147. The final product in the following reaction sequence is



- A. p-Chlorobenzamide

- B. p-Chlorophenol
- C. p-Chlorobenzylamine
- D. p-Chlorobenzyl alcohol.

**Answer: C**

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**148.** Methylamine reacts with nitrous acid to form :

- A.  $CH_3CH_3$
- B.  $CH_3NO_2$
- C.  $CH_3OH$
- D.  $CH_3CH_2OH$ .

**Answer: C**

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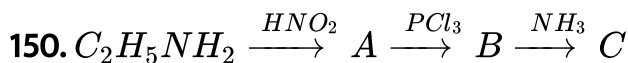
149. Why do  $2^\circ$  and  $3^\circ$  amines fail to undergo the carbylamine test

- A. The nitrogen atom of the amine group does not have the required number of hydrogen atom
- B. All the given reasons are correct
- C. They combine with chloroform to give a stable compound
- D. They react with alcoholic KOH.

**Answer: A**



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Recognise the compound C from the following

- A. Ethylamine
- B. Acetamide
- C. Propanenitrile
- D. Methylamine.

**Answer: A**



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**151.** The main product of the reaction



- A.  $CH_3Br$
- B.  $CH_4$
- C.  $CH_3OBr$
- D.  $CH_3NH_2$

**Answer: D**



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**152.** Hoffmann's bromamide reaction is used to convert

- A. an amine to amide
- B. an amide to amine
- C. an alcohol to acid
- D. an acid to alcohol.

**Answer: B**



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**153.** Aniline reacts with acetyl chloride to give

- A. phenol
- B. acetamide
- C. acetanilide
- D. benzene.

**Answer: B**



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**154.** Amine that cannot be prepared by Gabrielphthalimide synthesis is

- A. aniline
- B. benzyl amine
- C. methyl amine
- D. iso-butylamine

**Answer: A**



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**155.** Which of the following is the least basic amine ?

- A. Ethyl amine
- B. Diethyl amine
- C. Aniline
- D. Benzyl amine

**Answer: C**



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**156.** Carbylamine test is given by

- A. Alcohols
- B. Primary amines
- C. Carboxylic acid
- D. Aldehyde.

**Answer: B**



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**157.** Aniline reacts with phosgene to give

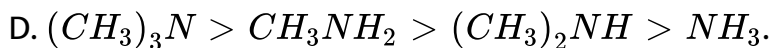
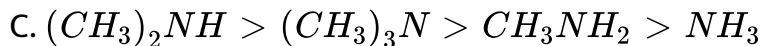
- A. Chlorobenzene
- B. Phenyl isocyanate
- C. Phenyl cyanide
- D. Phenyl cyanate.

Answer: B



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158. Which of the following is the correct increasing order of basicity of amines in gaseous phase ?

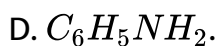
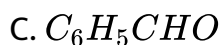
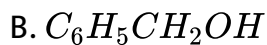
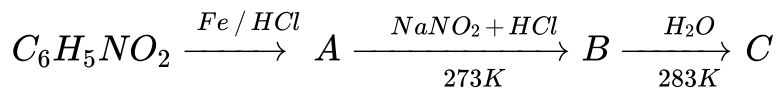


Answer: B



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159. Identify the product C in the series.



Answer: A



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160. Compound that has smell of bitter almonds is

A. aniline

B. benzonitrile



C. phenyl isocyanide

D. nitrobenzene.

**Answer: D**



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**161.** Which of the following reagents can be used to convert acetamide into methanamine ?

A.  $P_2O_5$

B.  $NaOBr$

C.  $LiAlH_4 / H_2O$

D.  $Na(Hg) / C_2H_5OH$ .

**Answer: B**



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**162.** What is obtained when nitrobenzene is treated sequentially with

(i)  $NH_4Cl / Zn$  dust and (ii)  $H_2SO_4 / Na_2Cr_2O_7$

- A. m-chlorobenzene
- B. p-chloronitrobenzene
- C. nitroso benzene
- D. benzene.

**Answer: C**



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**163.** Amongst the compounds given, the one that would form a brilliant coloured dye with  $NaNO_2$  in dil. HCl followed by addition

to an alkaline solution of naphthol is

A. 

B. 

C. 

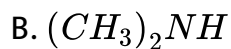
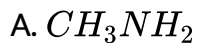
D. 

**Answer: C**



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**164.** Which of the following is most basic in aqueous solution ?



**Answer: B**



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**165.** Which of the suggested tests can be used to differentiate the given compound ?

- A.  $1^\circ$  and  $2^\circ$  amine (carbylamine test)
- B.  $CH_3CHO$  and  $CH_3CH_2CHO$  (Tollen's test)
- C.  $CH_3OH$  and  $CH_3CH_2OH$  (Lucas test)
- D.  $CH_3COCH_3$  and  $CH_3CH_2COCH_3$  (Brady's test).

**Answer: A**



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**166.** Medius reduction converts an alkyl cyanide to

A. a primary amine

B. an aldehyde

C. a ketone

D. an oxime.

**Answer: A**



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**167.** Which of the following amines cannot be prepared by Gabriel's synthesis

A. Butyl amine

B. Isopropylamine

C. 2-Phenylethylamine

D. N-Methyl amine.

**Answer: D**

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**168.** The major product of the following reaction is



A. 

B. 

C. 

D. 

**Answer: A**

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169. In a set of reaction, m bromobenzoic acid gave a product D.

Identify the product D.



A.

B.

C.

D.

**Answer: D**



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170. Which of the following compounds is most basic ?

A.

B. 

C. 

D. 

**Answer: B**

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**171.** The strongest base is

A. N, N-diethyl ethanamine

B. N-ethyl ethanamine

C. N-methyl methylamine

D. Phenyl methyl amine.

**Answer: B**

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172. Aniline hydrogen sulphate on heating with sulphuric acid at 453-473 K produces

- A. benzene sulphuric acid
- B. anthranilic acid
- C. aniline
- D. Sulphanilic acid.

**Answer: D**



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173. Aniline is treated with bromine water to give an organic compound 'X' which when treated with  $NaNO_2$  and  $HCl$  at  $0^\circ C$

gives a water soluble compound 'Y'. Compound 'Y' on treatment with  $CuCl_2$  and  $HCl$  gives compound Z. Compound Z is

- A. o-bromochlorobenzene
- B. p-bromochlorobenzene
- C. 2, 4, 6-tribromophenol
- D. 2, 4, 6-tribromochlorophenol

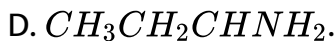
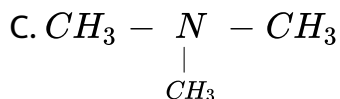
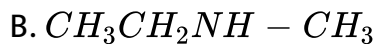
**Answer: D**



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**174.** An organic compound ( $C_3H_9N$ ) (A) when treated with nitrous acid, gave an alcohol and  $N_2$  gas was evolved (A) on warming with  $CHCl_3$  and caustic potash gave (C) which on reduction gave isopropyl methylamine. Predict the structure of (A)

A. 



**Answer: A**



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**175.** In basicity of aniline is weaker in comparison to that of methylamine due to

A. hyperconjugative effect of Me group of  $MeNH_2$

B. resonance effect of phenyl group in aniline

C. lower molecular mass of methylamine as compared to that of aniline

D. resonance effect of  $-NH_2$  group in  $MeNH_2$

**Answer: B**



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**176.** Secondary amine could be separated by

- A. reduction of nitriles
- B. Hofmann bromamide
- C. reduction of amides
- D. reduction of isonitrile

**Answer: D**



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**177.** Aniline is separated from aniline-water mixture is

- A. Ceptallization
- B. Steam distillation
- C. Solvent extraction
- D. sublimation

**Answer: B**



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**178.** Which one of the following is not a primary amine ?

- A. tert-Butylamine
- B. Ethylamine
- C. sec-Butylamine
- D. dimethylamine.

**Answer: D**



**View Text Solution**

**179.** Aniline reacts with excess bromine in aqueous solution to give major product as

- A. p-bromoaniline
- B. o-bromoaniline
- C. 2, 4-dibromoaniline
- D. 2, 4, 6-tribromoaniline.

**Answer: D**



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180. Which of the following compounds will not undergo Friedel-Crafts reaction easily ?

- A. Nitrobenzene
- B. Toluene
- C. Cumene
- D. Xylene.

Answer: A



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181. Nitrobenzene on reaction with  $HNO_3/H_2SO_4$  on  $80^\circ - 100^\circ C$  forms which one of the following products

- A. 1,4-Dinitrobenzene

B. 1, 2, 4-Trinitrobenzene

C. 1, 2-Dinitrobenzene.

D. 1, 3-Dinitrobenzene.

**Answer: D**



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**182.** An organic compound A upon reacting with  $NH_3$  gives, B on heating, B gives C. C in presence of KOH reacts with  $Br_2$  to give  $CH_3CH_2NH_2$ . A is

A.  $CH_3CH_2COOH$

B.  $CH_3COOH$

C.  $CH_3CH_2CH_2COOH$

D.  $CH_3 - \underset{\substack{| \\ CH_3}}{CH} - COOH$



**Answer: A**



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**183.** Among the following amines, the strongest Bronsted base is



**Answer: B**



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**184.** A compound with molecular mass 180 is acylated with  $CH_3COCl$  to get a compound with molecular mass 390. The number of amino group present per molecule of the former compound is

A. 6

B. 2

C. 5

D. 4

**Answer: C**

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**185.** Positive carbylamine test is shown by

A. N, N-dimethylamine

B. triethylamine

C. N-methylamine

D. p-methylbenzyl amine

**Answer: D**



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**186.** In the reaction



A.  $H_3PO_2$  and  $H_2O$

B.  $H^+ / H_2O$

C.  $HgSO_4 / H_2SO_4$

D.  $Cu_2Cl_2$ .

**Answer: A**



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## Selected Straight Objective Type MCQs

1. The compound X ( $C_4H_{11}N$ ) on treatment with nitrous acid gives a tertiary alcohol ( $C_4H_{10}O$ ). The compound X must also respond to

- A. Mustard oil reaction
- B. Libermann nitroso reaction
- C. Beckmann rearrangement
- D. Carbylamine reaction.

**Answer: A:D**



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2. Which of the following will react with aldehydes, ketones and also with nitrosobenzene ?

A. Aniline

B. Grignard's reagent

C. Benzyl chloride

D.  $NH_2OH$ .

**Answer: A::B::D**



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3. Consider the compounds

Pick up the correct statement/s



A. II is more basic than I and III

B. All are aromatic bases


C. III is more basic than II

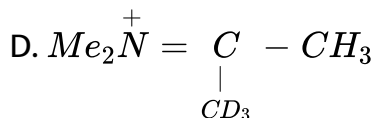
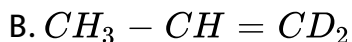
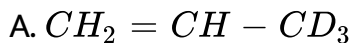
D. I is more basic than II.

**Answer: A:B**



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4. Strong heating of  produces N, N-dimethyl hydroxylamine along with

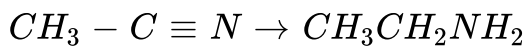


**Answer: A::B**



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5. Which reagent among the following can affect the conversion ?



A.  $H_2 / Pt$

B.  $LiAlH_4$


C. Amm.  $AgNO_3$

D.  $NaBH_4$ .

**Answer: A::B**



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6.  can be converted into azobenzene by reaction with

A.  $LiAlH_4$  / ether

B.  $Zn / NH_4Cl$

C.  $Zn / NaOH, CH_3OH$

D.  $H_2$  / Raney  $Ni$ .

**Answer: A::B**



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7. p-Nitro aniline can be obtained by

A. 

B. 

C. 



D. 

**Answer: C::D**

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8. Which among the following species have  $sp^2$  hybrid N-atom ?

A. Nitrobenzene

B. Trimethylamine

C. Pyrrole

D. Acetaldoxime.

**Answer: A::C::D**

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9. Of the chemical reactions given below which can result in the formation of  $C_6H_5CH_2NH_2$  ?

A. 

B. 

C. 

D.  $C_6H_5CN \xrightarrow{H_2O / H^+}$

**Answer: B::C**



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10. The products of reactio of alcoholic silver nitrite with ethyl bromide are

A. Ethane

B. Ethene

C. Nitroethane

D. Ethyl nitrite.

**Answer: C::D**



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11. When nitrobenzene is treated with  $Br_2$  in presence of  $FeBr_3$ , the major product formed is m-bromonitrobenzene. The statements which are related to obtain the m-isomer are

A. The electron density on meta carbon is more than at ortho and para-positions

B. The intermediate carbonium ion formed after initial attack of  $Br^+$  at the meta-positions is least destabilised

C. Loss of aromaticity when  $Br^+$  attacks at the ortho and para positions and not at m-position

D. Easier loss of  $H^+$  to regain aromaticity from the meta position than from ortho and para positions.

**Answer: A::B**



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12. Reaction of  $RCONH_2$  with a mixture of  $Br_2$  and  $KOH$  gives  $RNH_2$  as the main product. The intermediates involved in the reaction are

A.  $RCONHBr$

B.  $R - NHBr$

C.  $R - N = C = O$

D.  $RCONBr_2$ .

Answer: A:C



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13. Examine the following two structures for the aniline ion and choose the correct statement from the ones given below



- A. II is not an acceptable canonical structure because carbonium ions are less stable than ammonium ions
- B. II is not an acceptable canonical structure because it is non-aromatic
- C. II is not an acceptable canonical structure because the nitrogen has ten valence electrons

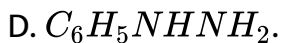
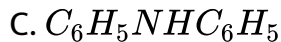
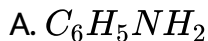
D. It is an acceptable canonical structure.

**Answer: A:C**



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14. Among the following compounds, which will react with acetone to give a product containing  $>C=N-$ ?



**Answer: A:D**



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15. p-Chloroaniline and anilinium hydrochloride can be distinguished by

A. Sandmeyer reaction

B.  $\text{NaHCO}_3$

C.  $\text{AgNO}_3$

D. Carbylamine test.

Answer: A::B::C



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16. A positive carbylamine test is given by

A. N, N-Dimethylaniline

B. 2, 4-Dimethylaniline

C. N-Methyl-o-methylaniline

D. p-Methylbenzylamine.

**Answer: B::D**



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17. Acetamide is treated separately with the following reagents.

Which one of these would give methylamine ?

A.  $PCl_5$

B.  $NaOH + Br_2$

C. Sodalime

D. Hot conc.  $H_2SO_4$ .

**Answer: B**



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18. Carbylamine test is performed in alcoholic KOH by heating a mixture of

- A. Chloroform and silver powder
- B. Trihalogenated methane and a primary amine
- C. An alkyl halide and a primary amine
- D. An alkyl cyanide and a primary amine.

**Answer: B**



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19. In the reaction of benzene with a mixture of conc.  $HNO_3$  and conc.  $H_2SO_4$ , the active species involved is

- A. nitrite ion

B. nitrate ion

C. nitronium ion

D. nitric acid.

**Answer: C**



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**20.** Which of the following is most reactive towards electrophilic nitration ?

A. Toluene

B. Benzene

C. Benzoic acid

D. Nitrobenzene.

**Answer: A**



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21. The most basic compound amongst the following is

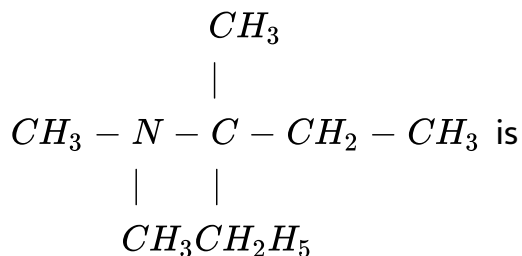
- A. Benzylamine
- B. Aniline
- C. p-Nitroaniline
- D. Ethanamide.

**Answer: A**



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22. IUPAC name for the amine



- A. 3-Dimethylamino-3-methyl pentane
- B. 3(N, N-Triethyl)-3-aminopentane
- C. 3-N, N-Trimethyl pentanamine
- D. 3-N, N-Dimethylamino-3-methylpentane.

Answer: D



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23. Butanenitrile may be prepared by heating

- A. Propyl alcohol with KCN

- B. Butyl alcohol with KCN
- C. Butyl chloride with KCN
- D. Propyl chloride with KCN.

**Answer: A**



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**24.** Allyl isocyanide contains  $\sigma$  and  $\pi$  bonds, as

- A.  $9\sigma$  and  $3\pi$
- B.  $9\sigma$  and  $9\pi$
- C.  $3\sigma$  and  $4\pi$
- D.  $5\sigma$  and  $7\pi$ .

**Answer: A**



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25. Nitrobenzene can be prepared from benzene by using a mixture of conc.  $HNO_3$  and conc.  $H_2SO_4$ . In the nitrating mixture, nitric acid acts as a

- A. base
- B. acid
- C. reducing agent
- D. catalyst.

**Answer: A**



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26. Among following statements on the nitration of aromatic compounds, the false one is

- A. the rate of nitration of benzene is almost the same as that of hexadeuterobenzene
- B. the rate of nitration of toluene is greater than that of benzene
- C. the rate of nitration of benzene is greater than that of hexadeuterobenzene
- D. nitration is an electrophilic substitution reaction.

**Answer: C**

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27. Benzenediazonium chloride on reaction with phenol in weakly basic medium gives

- A. Diphenyl ether

B. p-Hydroxyazobenzene

C. Chlorobenzene

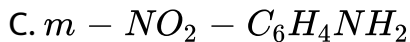
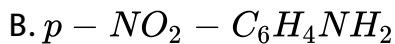
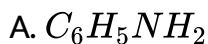
D. Benzene.

**Answer: B**



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**28.** Among the following, the strongest base is



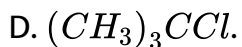
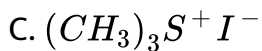
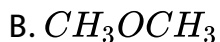
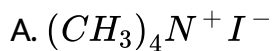
**Answer: D**



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29. The compound that will react most readily NaOH to form methanol is



**Answer: A**



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30. The correct order of basicities of the following compounds is



A.  $2 > 1 > 3 > 4$

B.  $1 > 3 > 2 > 4$

C.  $3 > 1 > 2 > 4$

D.  $1 > 2 > 3 > 4$ .

**Answer: B**



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**31.** Identify correct order of reactivity in electrophilic substitution reaction of the following compounds :



A.  $> 2 > 3 > 4$

B.  $4 > 3 > 2 > 1$

C.  $2 > 1 > 3 > 4$

D.  $2 > 3 > 1 > 4$ .

**Answer: C**



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32. Benzamide on reaction with  $POCl_3$  gives

A. aniline

B. chlorobenzene

C. benzyl amine

D. benzonitrile.

**Answer: D**



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33. The following sequence of reactions on A gives



A.

B.

C.

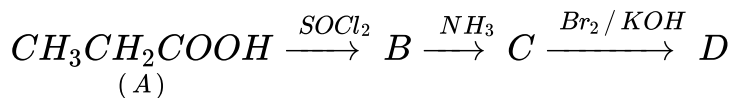
D.

Answer: C



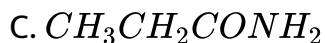
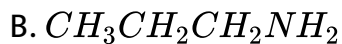
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34. In a set of reactions, propionic acid yielded a compound D



The structure of D would be

A.  $CH_3CH_2NH_2$



**Answer: A**



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**35.** Which of the following is more basic than aniline ?

A. benzylamine

B. diphenylamine

C. triphenylamine

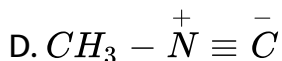
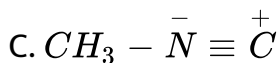
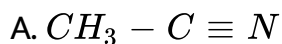
D. p-nitroaniline.

**Answer: A**



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36.  $CH_3NH_2 + CHCl_3 + KOH \rightarrow$  nitrogen containing compound +  $KCl + H_2O$ . Nitrogen containing compound is



Answer: D

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37. 

The alkene formed as a major product in the above elimination reaction is

A. 

B.  $CH_2 = CH$

C. 

D. 

**Answer: D**



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**38.** In the following reaction,



The structure of the major product X is

A. 

B. 

C. 

D. 

**Answer: B**



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**39.** Which of the following on reduction with lithium aluminium hydride yields a secondary amine ?

A. Methyl cyanide

B. Nitroethane

C. Methyl isocyanide

D. Acetamide.

**Answer: C**



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40. Which one of the following is the strongest base in aqueous solution?

- A. Methylamine
- B. Trimethylamine
- C. Aniline
- D. dimethylamine.

Answer: D



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41. In the chemical reaction

$CH_3CH_2NH_2 + CHCl_3 + 3KOH \rightarrow (A) + (B) + 3H_2O$  the compound (A) and (B) are respectively

- A.  $C_2H_5NC$  and  $3KCl$

B.  $C_2H_5CN$  and  $3KCl$

C.  $CH_3CH_2CONH_2$  and  $3KCl$

D.  $C_2H_5NC$  and  $K_2CO_3$ .

**Answer: A**



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42. Presence of a nitro group in a benzene ring:

A. deactivates the ring towards electrophilic substitution

B. activates the ring towards electrophilic substitution

C. reduces the ring basic

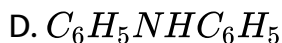
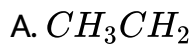
D. deactivates the ring towards nucleophilic substitution.

**Answer: A**



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43. Which of the following compounds will dissolve in an alkali solution after it undergoes reaction with Hinsberg's reagent ?

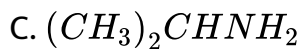
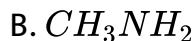
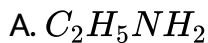


**Answer: A**



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44. Which of the following will give  $N_2$  gas on treatment with nitrous acid ( $NaNO_2 + HCl$ ) ?



D. All will give  $N_2$ .

**Answer: D**



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**45. Which of the following statements is true ?**

A. Tri-methylamine forms a soluble compound with Hinsberg's reagent and KOH

B. Dimethylamine reacts with KOH and phenol to form an azo dye

C. Methylamine is a primary amine

D. Methylamine is soluble in water

**Answer: C**

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**46.** In the following sequence of reactions, what is D ?



- A. Primary amine
- B. An amide
- C. Phenyl isocyanide
- D. Chain lengthened hydrocarbon.

**Answer: C**

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47. Toluene is nitrated and the resulting product is reduced and then diazotised and then with cuprous bromide. The reaction mixture so formed contains

- A. mixture of o- and m- bromotoluenes
- B. mixture of o- and p- bromotoluenes
- C. mixture of o- and p- dibromobenzenes
- D. mixture of o- and p- bromo amines.

**Answer: B**

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48. In the reaction of aniline, a coloured product C was obtained.



The structure of C would be

A. 

B. 

C. 

D. 

**Answer: B**



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**49.** Acetamide is treated separately with the following reagents.

Which one of these would give methyl amine ?

A. Sodalime

B. Hot conc.  $H_2SO_4$

C.  $PCl_5$



**Answer: B**



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50. In a set of reactions, ethyl benzene yielded a product D.



'D' would be :

A.

B.

C.

D.

**Answer: C**



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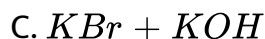
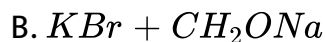
## LINKED COMPREHENSION TYPE

1. The conversion of an amide to an amine with one carbon atom less by the action of alkaline hydrohalite is known as Hofmann bromamide degradation



In this reaction,  $RCONBr$  is formed from which the reaction has derived its name. Hofmann degradation is an intra molecular reaction.

How can be conversion (i) to (ii) be brought about ?



Answer: D



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2. The conversion of an amide to an amine with one carbon atom less by the action of alkaline hydrohalite is known as Hofmann bromamide degradation



In this reaction,  $RCONBr$  is formed from which the reaction has derived its name. Hofmann degradation is an intra molecular reaction.

Which is the rate determining step in Hofman bromamide degradation ?

- A. Formation of (i)
- B. Formation of (ii)
- C. Formation of (iii)

## D. Formation of (iv)

**Answer: D**



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3. The conversion of an amide to an amine with one carbon atom less by the action of alkaline hydrohalite is known as Hofmann bromamide degradation



In this reaction,  $RCONBr$  is formed from which the reaction has derived its name. Hofmann degradation is an intra molecular reaction.

What are the constituent amines formed when the mixture of (i) and (ii) undergoes Hofmann bromamide degradation ?



A. 

B. 

C. 

D. 

**Answer: B**

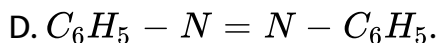
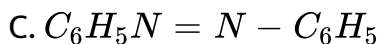
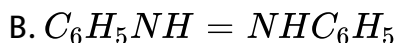
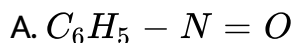


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4. The reaction of nitrocompounds to primary amines occurs through the intermediate formation of nitroso compound and hydroxylamine catalytic hydrogenation of reduction of nitro compound with an active metal and concentrated hydrochloric acid always gives the corresponding primary amines. In the neutral medium, the nitro compounds are reduced to corresponding hydroxylamines. However, in the basic medium, bimolecular reduction products are obtained which result through initial condensation of nitroso and hydroxyl amine intermediates

followed by reduction to give different products depending upon the nature of the reducing agent used

In the reduction of nitrobenzene, which of the following is the intermediate



**Answer: D**



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5. The reaction of nitrocompounds to primary amines occurs through the intermediate formation of nitroso compound and hydroxylamine catalytic hydrogenation of reduction of nitro

compound with an active metal and concentrated hydrochloric acid always gives the corresponding primary amines. In the neutral medium, the nitro compounds are reduced to corresponding hydroxylamines. However, in the basic medium, bimolecular reduction products are obtained which result through initial condensation of nitroso and hydroxyl amine intermediates followed by reduction to give different products depending upon the nature of the reducing agent used

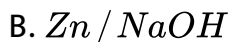
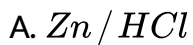
The reagent that reacts with nitromethane to form methyl hydroxylamine is ?

- A.  $Zn / HCl$
- B.  $Zn / NH_4Cl$
- C.  $Zn / NaOH$
- D.  $Sn / HCl$

**Answer: B**



6. Hydrobenzene is formed when nitrobenzene is reduced with



**Answer: B**

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7. All aliphatic amines are more basic than ammonia but due to delocalisation of lone pair of electrons of the nitrogen atom on the benzene ring, aniline is a weaker base than ammonia. The basic strength of the substituted anilines, however, depends upon the

nature of the substituent whereas electron donating group tend to increase, electron-withdrawing groups tend to decrease the basic strength. The base strengthening effect of the electron-donating group and the base weakening effect of the electron-withdrawing group is, however, more pronounced at p-than at m-position. However due to ortho effect, o-substituted anilines are weaker bases than anilines regardless of the nature of substituent whether electron-donating or electron withdrawing.

The correct order of increasing basic nature of the following bases is



A.  $2 > 1 < 3 < 4$

B.  $2 < 1 > < 4$

C.  $2 < 1 > 4 < 3$

D.  $2 < 1 < 3 < 4$ .

**Answer: D**





8. All aliphatic amines are more basic than ammonia but due to delocalisation of lone pair of electrons of the nitrogen atom on the benzene ring, aniline is a weaker base than ammonia. The basic strength of the substituted anilines, however, depends upon the nature of the substituent whereas electron donating group tend to increase, electron-withdrawing groups tend to decrease the basic strength. The base strengthening effect of the electron-donating group and the base weakening effect of the electron-withdrawing group is, however, more pronounced at p- than at m- position. However due to ortho effect, o-substituted anilines are weaker bases than anilines regardless of the nature of substituent whether electron-donating or electron withdrawing.

Choose among the following amines the correct decreasing order of their basic strength



A.  $I > II > III > IV$

B.  $I > IV > II > III$

C.  $II > I > IV > III$

D.  $I > IV > III > II$ .

**Answer: D**

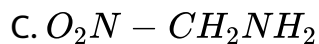
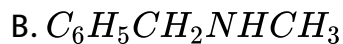
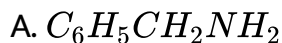


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9. All aliphatic amines are more basic than ammonia but due to delocalisation of lone pair of electrons of the nitrogen atom on the benzene ring, aniline is a weaker base than ammonia. The basic strength of the substituted anilines, however, depends upon the nature of the substituent whereas electron donating group tend to increase, electron-withdrawing groups tend to decrease the basic strength. The base strengthening effect of the electron-donating group and the base weakening effect of the electron

withdrawing group is, however, more pronounced at p-than at m-position. However due to ortho effect, o-substituted anilines are weaker bases than anilines regardless of the nature of substituent whether electron-donating or electron withdrawing.

Select the weakest base among the following



**Answer: C**



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10. The amino group when attached to the ring makes it highly activating towards electrophilic substitution. Consequently, the

electrophilic substitution readily takes place in aniline at all the three ortho and para positions. However on acetylation with acetyl chloride the activation of the ring to amino group is sufficiently reduced and the electrophilic substitution in benzene ring takes place preferably at the para position which is less hindered than the ortho position.

Towards electrophilic substitution, most reactive will be

- A. Nitrobenzene
- B. Aniline
- C. Aniline hydrochloride
- D. N acetylamine.

**Answer: B**



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11. The amino group when attached to the ring makes it highly activating towards electrophilic substitution. Consequently, the electrophilic substitution readily takes place in aniline at all the three ortho and para positions. However on acetylation with acetyl chloride the activation of the ring to amino group is sufficiently reduced and the electrophilic substitution in benzene ring takes place preferably at the para position which is less hindered than the ortho position.

Which of the following reagent is used to distinguish between



- A. Dilute  $HCl$
- B.  $C_6H_5SO_2Cl$  and  $OH^- / H_2O$
- C.  $HONO$  and  $\beta$ -naphthol
- D.  $AgNO_3$  (aqueous solution).

**Answer: A**



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12. The amino group when attached to the ring makes it highly activating towards electrophilic substitution. Consequently, the electrophilic substitution readily takes place in aniline at all the three ortho and para positions. However on acetylation with acetyl chloride the activation of the ring to amino group is sufficiently reduced and the electrophilic substitution in benzene ring takes place preferably at the para position which is less hindered than the ortho position.

3, 5 dibromotoluene can be best synthesised by

A. 

B. 

C. 

D. 

Answer: B



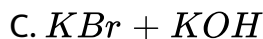
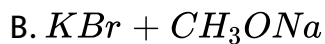
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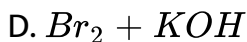
13.  $RCONH_2$  is converted into  $RNH_2$  by means of Hofmann bromamide dehydration



In this reaction,  $RCONHBr$  is formed from which this reaction has derived its name. Electron donating group at phenyl activities the reaction. Hofmann degradation reaction is an intramolecular reaction.

How can the conversion of (i) to (ii) be brought about ?





Answer: D



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14.  $RCONH_2$  is converted into  $RNH_2$  by means of Hofmann bromamide dehydration



In this reaction,  $RCONHBr$  is formed from which this reaction has derived its name. Electron donating group at phenyl activities the reaction. Hofmann degradation reaction is an intramolecular reaction.

Which is the rate determining step in Hofmann bromamide degradation ?

A. Formation of (i)



B. Formation of (ii)

C. Formation of (iii)

D. Formation of (iv)

**Answer: D**



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15.  $RCONH_2$  is converted into  $RNH_2$  by means of Hofmann bromamide dehydration



In this reaction,  $RCONHBr$  is formed from which this reaction has derived its name. Electron donating group at phenyl activities the reaction. Hofmann degradation reaction is an intramolecular reaction.

What are the constituent amines formed when the mixture of (i)

and (ii) undergoes Hofmann degradation ?



A. 

B. 

C. 

D. 

**Answer: B**



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## Matrix type

1. Here the question contain statement given in two columns which have to be matched. Statements in Column I are labelled as A, B, C and D, whereas statement in Column II are labelled as p, q, r and s.

the answers are to these questions have to be appropriately bubbled as illustrated in the following example. If the correct match as

a-p, A-s, B-q, B-r, C-p, C-q and D-p, their correctly labelled  $4 \times 4$  matrix should look like as under.



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2. Here the question contain statement given in two columns which have to be matched. Statements in Column I are labelled as A, B, C and D, whereas statement in Column II are labelled as p, q, r and s. the answers are to these questions have to be appropriately bubbled as illustrated in the following example. If the correct match as

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4. Here the question contain statement given in two columns which have to be matched. Statements in Column I are labelled as A, B, C and D, whereas statement in Column II are labelled as p, q, r and s. the answers are to these questions have to be appropriately bubbled as illustrated in the following example. If the correct match as

a-p, A-s, B-q, B-r, C-p, C-q and D-p, their correctly labelled  $4 \times 4$  matrix should look like as under.



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5. Here the question contain statement given in two columns which have to be matched. Statements in Column I are labelled as

A, B, C and D, whereas statement in Column II are labelled as p, q, r and s. the answers are to these questions have to be appropriately bubbled as illustrated in the following example. If the correct match as

a-p, A-s, B-q, B-r, C-p, C-q and D-p, their correctly labelled  $4 \times 4$  matrix should look like as under.



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6. Here the question contain statement given in two columns which have to be matched. Statements in Column I are labelled as A, B, C and D, whereas statement in Column II are labelled as p, q, r and s. the answers are to these questions have to be appropriately bubbled as illustrated in the following example. If the correct match as

a-p, A-s, B-q, B-r, C-p, C-q and D-p, their correctly labelled  $4 \times 4$  matrix should look like as under.



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## INTEGER TYPE

1. Isomeric amines of formula  $C_7H_9N$  that contain a benzene ring are

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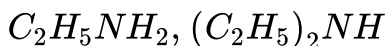
2. Total number of structural isomeric amines having molecular formula  $C_4H_{11}N$  are

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3. Number of primary amines having molecular formula are

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4. Number of amines among the following which give positive carbylamine test are



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5. How many aliphatic amines having molecular formula  $C_4H_{11}N$  react with acetyl chloride

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6. How many primary amines having formula  $C_7H_9N$  are possible ?

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7. How many of the following amines will undergo diazotisation ?

tert butyl amine, ethanamine, aniline, N-methyl-aniline, p-toluidine, m-chloro-anilines 2-phenylethanamine, o-anisidine, 2, 4, 6-tribromo aniline.

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8. The number of nitrogen atoms present in reduced product obtained on reducing nitrobenzene using  $LiAlH_4$  followed by aqueous work.

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9. How many of the following amines do not evolve  $N_2$  on treatment with  $NaNH_2 / HCl$ .

Aniline, N-methylamines, N, N-dimethyl aniline, diethyl amine, triethylamine, p-toludine, benzyl methylamine, o-anisidine, m-chloroaniline.



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## Assertion- Reason

1. Assertion (A) : Amides give primary amines with hydrobromides.

Reason (R): The reaction of amides with alkali is a qualitative test for  $CONH_2$  group.

A. Both A and R are true and R is the correct explanation of A.

B. Both A and R are true but R is not a correct explanation of A.

C. A is true but R is false.

D. A is false but R is false.

**Answer: B**



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2. Assertion (A) : Amines are more basic than ethers and esters.

Reason (R) : Nitrogen is less electronegative than oxygen, it is in better position to accommodate the positive charge on the proton.

A. Both A and R are true and R is the correct explanation of A.

B. Both A and R are true but R is not a correct explanation of A.

C. A is true but R is false.

D. A is false but R is false.

**Answer: A**



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3. Assertion (A) : All the amines, except tertiary amines are capable of forming intermolecular hydrogen bonds.

Reason (R) : Tertiary amines have larger molecules and surface area.

- A. Both A and R are true and R is the correct explanation of A.
- B. Both A and R are true but R is not a correct explanation of A.
- C. A is true but R is false.
- D. A is false but R is false.

**Answer: C**



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4. Assertion (A) : Aniline is a weaker base than p-anisidine.

Reason (R) : The benzene ring in aniline exerts a +R effect.

- A. Both A and R are true and R is the correct explanation of A.
- B. Both A and R are true but R is not a correct explanation of A.
- C. A is true but R is false.
- D. A is false but R is false.

**Answer: C**



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5. Assertion (A) : Methyl isocyanide has higher boiling point than methyl cyanide.

Reason (R) : Methyl isocyanide has a coordinate bond between N and C. N is donor while carbon atom is acceptor.

- A. Both A and R are true and R is the correct explanation of A.
- B. Both A and R are true but R is not a correct explanation of A.
- C. A is true but R is false.
- D. A is false but R is false.

**Answer: D**



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**6.** Assertion (A) : Methyl isocyanide cannot be hydrolysed by dilute alkali.

Reason (R) : N-atom in methyl isocyanide has a negative charge and hence nucleophile cannot attack it.

- A. Both A and R are true and R is the correct explanation of A.
- B. Both A and R are true but R is not a correct explanation of A.

C. A is true but R is false.

D. A is false but R is false.

**Answer: A**



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7. Assertion (A) : Aniline is a weaker base than ammonia.

Reason (R) : Aniline is resonance stabilised.

A. Both A and R are true and R is the correct explanation of A.

B. Both A and R are true but R is not a correct explanation of A.

C. A is true but R is false.

D. A is false but R is false.

**Answer: B**



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8. Assertion (A) : Benzonitrile is prepared by the reaction of chlorobenzene with  $KCN$ .

Reason (R) : Cyanide ( $CN^-$ ) is a strong nucleophile.

- A. Both A and R are true and R is the correct explanation of A.
- B. Both A and R are true but R is not a correct explanation of A.
- C. A is true but R is false.
- D. A is false but R is false.

**Answer: D**



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9. Assertion (A) : Benzyl amine is more basic than aniline.

Reason (R) : Positive inductive effect of phenyl group creates high



electron density around N atom.

- A. Both A and R are true and R is the correct explanation of A.
- B. Both A and R are true but R is not a correct explanation of A.
- C. A is true but R is false.
- D. A is false but R is false.

**Answer: C**



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**10.** Assertion (A) : p-Anisidine is a weaker base as compared to Aniline.

Reason (R) : Benzene ring in Aniline exerts -R effect.

- A. Both A and R are true and R is the correct explanation of A.
- B. Both A and R are true but R is not a correct explanation of A.

C. A is true but R is false.

D. A is false but R is false.

**Answer: D**



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**11.** Assertion (A) : At isoelectric point, the amino acid does not migrate under the influence of electrical field.

Reason (R) : The amino acid molecule at the isoelectric point exerts as zwitter ion structure.

A. Both A and R are true and R is the correct explanation of A.

B. Both A and R are true but R is not a correct explanation of A.

C. A is true but R is false.

D. A is false but R is false.

**Answer: A**



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**12.** Assertion (A) : Carbylamine reaction involves the chemical reaction between  $1^\circ$  amine and chloroform in basic medium.

Reason (R) : In carbylamine reaction,  $-NH_2$  group changes to  $-NC$  group.

- A. Both A and R are true and R is the correct explanation of A.
- B. Both A and R are true but R is not a correct explanation of A.
- C. A is true but R is false.
- D. A is false but R is false.

**Answer: A**



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13. Assertion (A) : Ammonolysis of alkyl halides mainly produces 2° amines.

Reason (R) : Ammonolysis of halides involves the reaction between alkyl halides and alcoholic ammonia.

- A. Both A and R are true and R is the correct explanation of A.
- B. Both A and R are true but R is not a correct explanation of A.
- C. A is true but R is false.
- D. A is false but R is false.

**Answer: D**

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14. Assertion (A) : In order to convert  $R - Cl$  to pure  $R - NH_2$  Gabriel Phthalimide synthesis can be used.

Reason (R) : Phthalimide synthesis can be used to prepare pure  $1^\circ$  or  $2^\circ$  or  $3^\circ$  amines separately with proper choice of alkyl halide.

- A. Both A and R are true and R is the correct explanation of A.
- B. Both A and R are true but R is not a correct explanation of A.
- C. A is true but R is false.
- D. A is false but R is false.

**Answer: C**



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15. Assertion (A) :  $\beta$ -naphthol and benzene diazonium chloride react at low temperature to produce an azo dye.

Reason (R) : The reaction with  $\beta$ -Naphthol and Benzene diazonium chloride is called coupling reaction.

- A. Both A and R are true and R is the correct explanation of A.

B. Both A and R are true but R is not a correct explanation of A.

C. A is true but R is false.

D. A is false but R is false.

**Answer: B**



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**16.** Assertion (A) : Nitration of aniline can only be done by protecting  $-NH_2$  group through acetylation.

Reason (R) : Acetylation of aniline results in the increase of electron density at the benzene ring.

A. Both A and R are true and R is the correct explanation of A.

B. Both A and R are true but R is not a correct explanation of A.

C. A is true but R is false.

D. A is false but R is false.

**Answer: C**



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**17. Assertion (A) :** Alkyl cyanides as well as alkyl isocyanides have much higher boiling points than corresponding alkyl halides.

**Reason (R) :** Cyanides and isocyanides are much more polar than alkyl halides.

- A. Both A and R are true and R is the correct explanation of A.
- B. Both A and R are true but R is not a correct explanation of A.
- C. A is true but R is false.
- D. A is false but R is false.

**Answer: A**

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18. Assertion (A) : Tertiary nitroalkanes cannot tautomerise to aciform.

Reason (R) : Tertiary nitroalkanes do not contain  $\alpha$ -hydrogen.

- A. Both A and R are true and R is the correct explanation of A.
- B. Both A and R are true but R is not a correct explanation of A.
- C. A is true but R is false.
- D. A is false but R is false.

**Answer: A**

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19. Assertion (A) : Nitrobenzene does not undergo Friedel-Crafts reaction.

Reason (R) : Nitrogroup in nitrobenzene deactivates the benzene ring.

- A. Both A and R are true and R is the correct explanation of A.
- B. Both A and R are true but R is not a correct explanation of A.
- C. A is true but R is false.
- D. A is false but R is false.

**Answer: A**



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20. Assertion (A) :  $(CH_3)_3N$  boils at 276 K while  $CH_3CH_2CH_2NH_2$  at 322K though both have same molecular

mass.

Reason (R) : Molecules of  $CH_3CH_2CH_2NH_2$  form hydrogen bonds while  $(CH_3)_3N$  molecules are incapable of forming hydrogen bonds.

- A. Both A and R are true and R is the correct explanation of A.
- B. Both A and R are true but R is not a correct explanation of A.
- C. A is true but R is false.
- D. A is false but R is false.

**Answer: A**



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**21.** Assertion (A) : n-propylamine boils at a higher temperature than n-propanol.

Reason (R) : n-propanal molecules form hydrogen bonds.

- A. Both A and R are true and R is the correct explanation of A.
- B. Both A and R are true but R is not a correct explanation of A.
- C. A is true but R is false.
- D. A is false but R is false.

**Answer: D**



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**22.** Assertion (A) : Cyclohexylamine is weaker than aniline.

Reason (R) : The lone pair of electrons on nitrogen is delocalised over benzene nucleus in aniline. The lone pair of electrons on nitrogen in cyclohexyl amine is localised.

- A. Both A and R are true and R is the correct explanation of A.
- B. Both A and R are true but R is not a correct explanation of A.

C. A is true but R is false.

D. A is false but R is false.

**Answer: D**



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**23.** Assertion (A) : Silver chloride dissolves in methyl amine solution.

Reason (R) : Silver chloride is insoluble in water.

A. Both A and R are true and R is the correct explanation of A.

B. Both A and R are true but R is not a correct explanation of A.

C. A is true but R is false.

D. A is false but R is false.

**Answer: B**



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24. Assertion (A) : Alkyl isocyanides in acidified water give alkyl formamides

Reason (R) : In isocyanides, carbon first acts as a nucleophile and then as an electrophile.

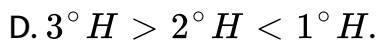
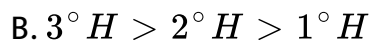
- A. Both A and R are true and R is the correct explanation of A.
- B. Both A and R are true but R is not a correct explanation of A.
- C. A is true but R is false.
- D. A is false but R is false.

**Answer: C**



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1. The ease of substitution of H by nitro group in alkane follows the order



**Answer: B**



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2. Vapour phase nitration of propane follows

A. electrophilic substitution mechanism

B. free radical substitution mechanism

C. nucleophilic substitution mechanism

D. electrophilic addition mechanism.

**Answer: B**



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3. The show step in the nitration of benzene involves the formation of

of

A. 

B. 

C. 

D. 

**Answer: B**



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4. The rate law of nitration of benzene using a mixture of nitric acid and sulphuric acid is



Answer: C



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5. In strongly acidic solution reduction of nitrobenzene with metal and acid gives

A. 



B. 

C. 

D. 

**Answer: C**



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6. Which of the following reducing agent will not reduce the nitrobenzene to azobenzene

A.  $Zn / NaOH$

B.  $LiAlH_4$

C. Sodium amalgam

D.  $SnCl_2 / HCl$ .

**Answer: D**



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7. When nitrobenzene is treated with  $Br_2$  in presence of  $FeBr_3$ , the major product formed is  $m$  - bromo - nitrobenzene.

Statement which is related to obtain the  $m$  - isomer is

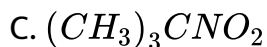
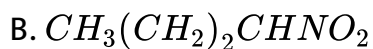
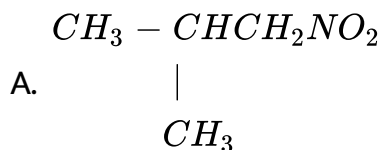
- A. the intermediate carbocation formed after initial attack of  $Br^+$  at the meta-position is least stabilised
- B. the electron density on meta carbon is more than that on ortho and para-positions
- C. loss of aromaticity when  $Br^+$  attacks at the ortho and para positions and not at meta position
- D. None of these.

**Answer: B**



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8. Which of the following compounds on hydrolysis by boiling hydrochloric acid form carboxylic acid ?



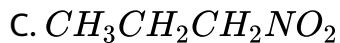
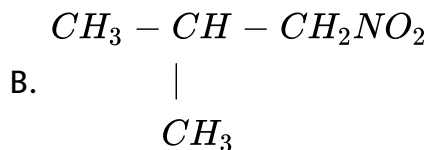
D. none of these.

**Answer: A**



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9. Nitrocompound (A) on reaction with nitrous acid gives a compound (B). B gives a red solution with NaOH. The compound (A) is

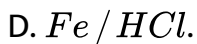
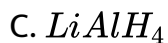
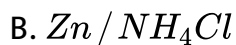
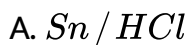


D. none of these.

**Answer: D**

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10. Which of the following reagents can be used to distinguish nitroethane and nitrobenzene ?



**Answer: C**

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**11.** How many primary amines including stereoisomers are possible for the molecular formula  $C_4H_{11}N$ .

A. 1

B. 2

C. 3

D. 4

**Answer: D**

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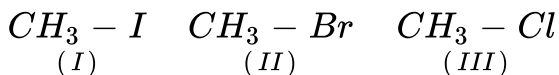
12. 2-Chloro-2-methylpropane on reaction with  $NH_3$  gives major product

- A. 2-amino-2-methylpropane
- B. isobutene
- C. butene-2
- D. t-butylamine.

**Answer: B**

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13. The order of reactivity of the following compounds towards ammonia is



- A.  $I > II > III$

B.  $I < II < III$

C.  $I < II > III$

D.  $I < III > II.$

**Answer: A**

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14. Which of the following compounds is expected to be most basic ?

A. 

B. 

C. 

D. 

**Answer: B**



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15. Amongst the following the most basic in nature is

- A. benzylamine
- B. aniline
- C. acetamide
- D. p-nitroaniline.

**Answer: A**



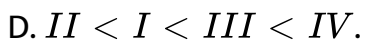
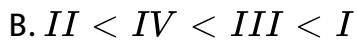
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16. The correct order of increasing ease of protonation is



- A.  $II < III < IV < I$



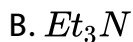


**Answer: C**



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17. The base with lowest  $pK_a$  value is



**Answer: A**



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18. Ethylamine on reaction with bromine in aq. Sodium carbonate solution gives

- A. Ethyl bromide
- B. N-Bromo-2-propanamine
- C. N-Bromoethylethanamine
- D. N-Bromoethanamine.

**Answer: C**

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19. Which of the following compounds will not liberate nitrogen gas on reaction with nitrous acid ?

- A. Diethylamine
- B. Aniline
- C. N-Phenylmethanamine
- D. All of these.

**Answer: D**

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20. 

Identify the compound X

- A. 
- B. 
- C. 
- D. 

**Answer: C**

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21. Which of the following statements regarding acetanilide is not true ?

A. It is a weaker base than aniline

B. It is less reactive towards electrophilic substitution than aniline

C. Nitration of acetanilide gives p-isomer as major product

D. 

**Answer: A**

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22. Compound A on reaction with  $PCl_5$  followed by ammonia gives B. B reacts with bromine and caustic potash forms C. C on reaction with  $HCl$  and  $NaNO_2$  at  $0^\circ C$  and then boiling produces orthocresol. Compound A is

- A. o-toluic acid
- B. m-toluic acid
- C. o-chlorotoluene
- D. o-dichlorobenzene.

Answer: A

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23. 2, 4-Dinitroaniline  $\xrightarrow[\text{(ii) Anisole}]{\text{(i) } NaNO_2 / HCl (273K)}$  Z.

Compound Z is

A. 

B. 

C. 

D. 

**Answer: C**



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24. The correct order of increasing basicity of the following compound is



A.  $I < II < III < IV$

B.  $II < III < IV < I$

C.  $II < IV < III < I$

D.  $III < II < IV < I$ .

**Answer: D**



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25. The most basic compound among the following is-

A. Benzyl amine

B. Aniline

C. Acetanilide

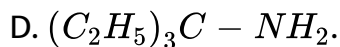
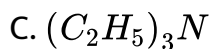
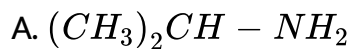
D. p-Nitroaniline.

**Answer: A**



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26. Which of the amine will not react with diethyl oxalate ?



Answer: C



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27. Which attacking species is generated from nitrating mixture during the nitration of phenol ?





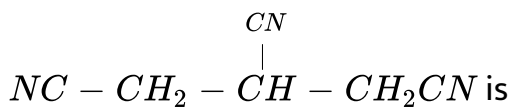
C.  $NO_2$  free radical

D.  $N_2O_3$ .

**Answer: B**

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**28.** The IUPAC name of the compound



A. 1, 2, 3-Propaneterinitrile

B. 1, 2, 3-Propanetricarbonitrite

C.  $\alpha, \beta$ -Dicyano-butyronitrile

D. 1, 2, 3-Tricyanopropane.

**Answer: B**



29. 

In the above sequence, II is :

- A.  $\beta$ -alanine
- B.  $\alpha$ -alanine
- C. ethylenediamine
- D.  $\gamma$ -aminobutyric acid.

**Answer: A**

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30. What is correct about the given below



- A. The structure II is most acceptable canonical form of aniline
- B. The structure II is acceptable because it is non-aromatic
- C. The structure II is unacceptable because here N atom has 10 valence electrons
- D. The structure II is acceptable because here N atom has 10 valence electrons.

**Answer: C**



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**31.** When methyl carbamine is heated for some time it is converted into

- A. Ethane
- B. Methane

C. Ethanamine

D. Ethane nitrile.

**Answer: D**



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**32.** Which of the following will give white precipitate with an aqueous solution of ethylamine ?

A.  $[Ag(NH_3)_2]^+$

B. Iron (II) sulphate

C. Zinc sulphate

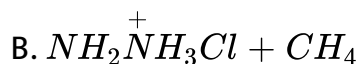
D. Cupric sulphate.

**Answer: C**



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33. Which of the following reactions will give tetra methyl hydrazine ?



Answer: D



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34. An organic molecule belonging to the category of schiff's base is subjected to reduction. The product of the reaction will be

A. aniline

B. sec.amine

C. primary amine

D. tertiary amine.

**Answer: B**



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35. An amine A reacts with benzene sulphonyl chloride and the product, thus, formed is soluble in KOH. The correct representation of the functional group of amine is

A.  $-NH$

B.  $-NH_2$

C.  $-\overset{|}{\underset{|}{N}}-$

D. both A and B.

**Answer: B**



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**36.** Among p-diphenylamine (I) p-anisidine (II) and p-toluidine (III), the correct order of decreasing basic strength is

A.  $I > II > III$

B.  $II > III > I$

C.  $I > III > II$

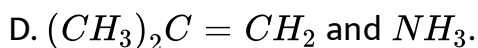
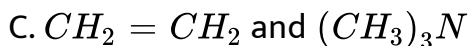
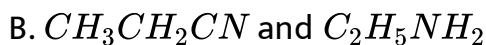
D.  $III > II > I$ .

**Answer: A**



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37. Trimethyl ethyl (A) ammonium iodide is allowed to react with silver hydroxide and the product formed is heated strongly at about 400 K. The final products are



**Answer: C**



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38. Nitroaniline is subjected to the treatment of various reagents in the following sequence

(i)  $NaNO_2 / HCl$  (1280 K) (ii)  $KI$  (iii) Cu Powder. The product is



A. 3, 3' Diaminobiphenyl

B. 3-Iodoaniline

C. 3-Nitroiodobenzene

D. 3, 3'-Dinitrobiphenyl.

**Answer: D**



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**39.** Which of the following is metamer of diethyl amine ?

A. N-Methylpropane-2-amine

B. N-Methylpropan-1-amine

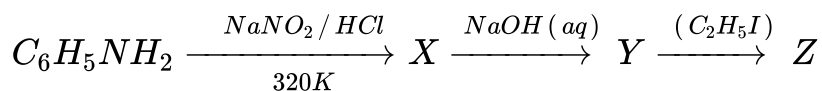
C. N-Methylbutan-2-amine

D. Both (A) and (B).

Answer: D

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40. Identify the end product Z in the following sequence



A. 

B. 

C. 

D. 

Answer: B

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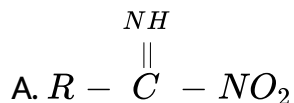
41. Which of the following combination will not yield secondary amine ?

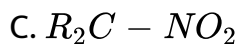
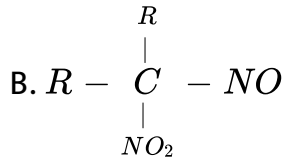
- A. Reduction of aldoxime
- B. Reduction of carbylamines
- C. Reduction of Schiff's base
- D. Reduction of N-Methylethanamide.

**Answer: A**

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42. Which of the following will give red colour with NaOH ?





**Answer: A**

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**43.** When an aqueous solution of thylamine and iron (III) chloride are mixed

- A. a colourless solution is formed
- B. brown precipitate is formed
- C. violet coloured solution is formed
- D. a black precipitate is formed.

**Answer: B**



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**44.** Benzene diazonium chloride on heating with very dilute  $H_2SO_4$  gives

- A. Benzene sulphonic acid
- B. Benzene sulphonyl chloride
- C. Benzene
- D. Phenol.

**Answer: D**



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45. The main product of bromination of acetanilide in glacial acetic acid is

- A. o-bromoaniline
- B. p-bromoaniline
- C. p-bromoacetanilide
- D. 2, 4, 6-tribromoacetanilide.

**Answer: B**

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46. Certain nitrogenous compound with molecular mass (180) shown an increase in its molecular mass to 348 after treatment with acetyl chloride. The number of possible  $-NH_2$  groups in the molecule is

A. 5

B. 4

C. 3

D. 6

**Answer: B**



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**47.** In the following compounds



The order of basicity is

A.  $IV > I > III > II$

B.  $III > I > IV > II$

C.  $II > I > III > IV$

D.  $I > III > II > IV$

**Answer: D**



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48. The  $1^\circ$  amine which do not give an alcohol with  $HNO_2$  is

A.  $CH_3NH_2$

B.  $C_2H_5NH_2$

C.  $CH_3CH_2CH_2NH_2$

D. None of these.

**Answer: A**



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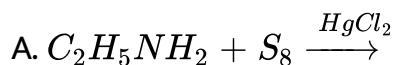
1. Hydroazobenzene on treatment with  $H_2SO_4$  forms

- A. Azobenzene
- B. Azobenzene sulphonic acid
- C. Benzidine
- D. None of the above.

**Answer: C**

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2. Which of the following combinations will produce ethyl isothiocyanate ?



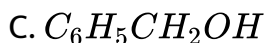
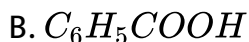
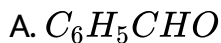
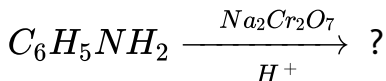


**Answer: C**



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3. The main product in the following reaction is



D. p-benzoquinone.

**Answer: D**



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4. Sweet spirit of nitre is

- A. Ethyl nitrite
- B. Nitrobenzene
- C. Chlorobenzene
- D. Nitroethane.

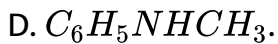
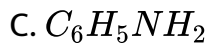
**Answer: A**



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5. Which of the following has the most stable conjugate acid ?

- A.  $(CH_3)_2NH$



**Answer: C**



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6. 

The above reaction is known as

A. Curtius reaction

B. Schmidt Reaction

C. Hoffmann's reaction

D. Dow's Process.

**Answer: D**



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7. An aliphatic amine on treatment with alcoholic carbon disulphide and mercuric chloride forms ethyl isothiocyanate, the reaction is known as

- A. Hoffmann's Reaction
- B. Hoffmann's Rearrangement
- C. Hoffmann's mustard oil reaction
- D. Hoffmann's Bromamide degradation reaction.

**Answer: C**



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8. 

The above reaction is called

- A. Hoffmann mustard oil reaction
- B. Vilsmeier reaction
- C. Darzen reaction
- D. Arndt Eistert synthesis.

**Answer: B**



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9. Which of the following is formed when ethanoic acid is warmed with  $HN_3$  in the presence of conc.  $H_2SO_4$  ?

- A. Methylamine

B. Ethanamide

C. Ethanamine

D. Oxamide.

**Answer: A**



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**10.** Nitrobenzene on further excessive nitration gives

A. Trinitrobenzene

B. m-Dinitrobenzene

C. p-Dinitrobenzene

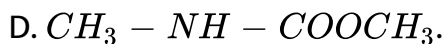
D. nitration does not occur.

**Answer: B**



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11. The product of a reaction between methyl isocyanate (MIC) and ethanol is urethane with formula



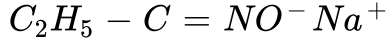
**Answer: A**



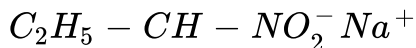
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12. The red coloured compound formed during the Victor Meyer's test for ethyl alcohol is





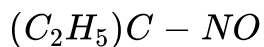
A.



B.



C.



D.



**Answer: B**



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**13.** A product of reaction between chloroform and ethanamine in KOH is allowed to react with  $Cl_2$ . The final product is

A. Ethyl chloride

B. Ethylenedichloride

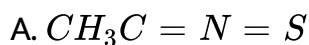
C. Ethylimino carbonyl chloride

D. Ethanol.

**Answer: C**

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14. Which of the following represents the poisonous gas which caused tragedy in Bhopal in 1984 ?



**Answer: B**

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15. 1, 2, 3-Tribromobenzene can be prepared in pure state from

- A. benzene by bromination with  $Br_2(aq)$
- B. benzene by bromination with  $Br_2$  in  $CS_2$
- C. benzene by bromination with  $Br_2$  in the presence of  $FeBr_3$
- D. None of these.

**Answer: D**



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16. Which of the following is used as a local anaesthetic ?

- A. Caffeine
- B. atropine

C. Novocaine

D. Nicotine.

**Answer: C**



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17. Which of the following alkaloid is an intense poison and is used to dilate the pupil of the eye in ophthalmic examination ?

A. Caffeine

B. Cocaine

C. Nicotine

D. Atropine.

**Answer: D**



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18. Which of the following is a  $1^\circ$  amine and acts as a neurotransmitter in the brain ?

A. Dopamine

B. Adrenaline

C. Caffeine

D. Nicotine.

**Answer: A**



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19. Which of the following is a  $1^\circ$  amine and acts as a powerful stimulant ?

A. Adrenaline

B. Caffeine

C. Nicotine

D. Amphetamine.

**Answer: D**



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20. Which of the following amine is a hormone released into the blood stream when an animal senses danger ?

A. Adrenaline

B. Dopamine

C. Amphetamine

D. Novocaine.

**Answer: A**



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21. Which of the following is an explosive component of dynamite ?

- A. Nitrobenzene
- B. Trinitrobenzene
- C. Glycol dinitrate
- D. Glyceryl trinitrate.

**Answer: D**



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22. Mononitration of aniline yields a mixture of three isomeric nitroanilines. The yield of these isomeric nitroanilines is in the order

A.  $p > o > m$

B.  $m > o > p$

C.  $m > p > o$

D.  $p > m > o$ .

**Answer: D**



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**23. Which of the following acid exists as zwitter ion ?**

A. Suphanilic acid

B. Picric acid

C. Carboic acid

D. Carbonic acid.



**Answer: A**



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**24.** Coupling is an example

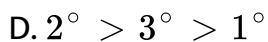
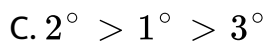
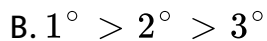
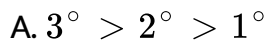
- A. electrophilic substitution reaction
- B. nucleophilic substitution reaction
- C. free radical substitution reaction
- D. electrophilic addition reaction.

**Answer: A**



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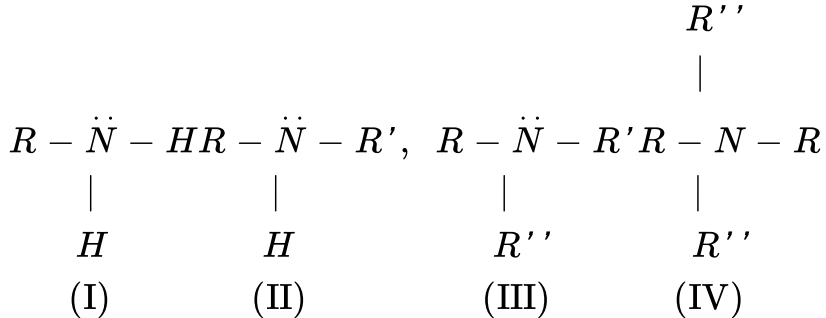
25. In gaseous phase the decreasing order of basic nature of the three methyl amines is in the order



**Answer: A**

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26. Out of the following four compounds, which is expected to show optical activity.



- A. Only III
- B. Only IV
- C. Both (III) and (IV)
- D. None of these.

**Answer: C**

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27. In the following compounds :



The order of basicity is

A.  $IV > I > III > II$

B.  $III > I > IV > II$

C.  $II > I > III > IV$

D.  $I > III > II > IV$

**Answer: D**



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**28.** Arrange the following amines in the increasing order of basicity : n-Butylamine (I), sec-Butylamine (II), Isobutylamine (III), tert-Butylamine IV.

A.  $I < II < III < IV$

B.  $IV < III < II < I$

C.  $II < III < I < IV$

D.  $III < IV < I < II$ .

**Answer: B**



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29. Aniline is treated with a mixture of  $NaNO_2$  and  $H_3PO_2$ , the product formed is

- A. Aniline diazonium hypophosphite
- B. Benzene
- C. Anilinium hypophosphite
- D. Aniline diazonium hypophosphite.

**Answer: B**



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30. In a nitrating mixture (conc.  $HNO_3$  + conc.  $H_2SO_4$ ) nitric acid acts as

- A. an acid
- B. base
- C. a catalyst
- D. an oxidising agent.

**Answer: A**



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31. The strongest base among the following agent.

- A. 2, 4, 6-Trinitro-N, N-dimethylaniline
- B. Aniline

C. 2, 4, 6-Trinitroaniline

D. N, N-Dimethylaniline.

**Answer: A**



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**32.** Acetaldehyde reacts with nitromethane in the presence of dil. NaOH to give

A. 1-Nitropropan-2-ol

B. 2-Nitropropan-1-ol

C. 1-Nitroprop-1-ene

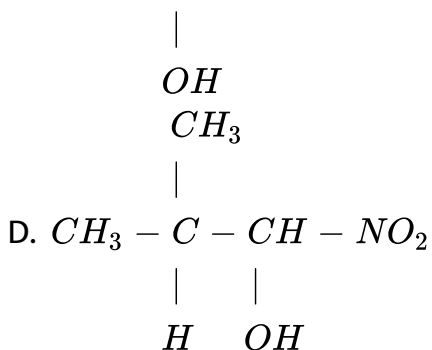
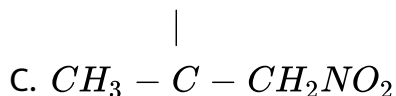
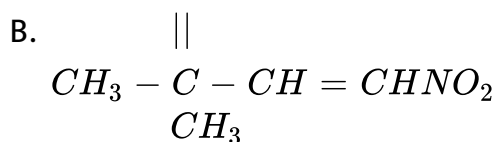
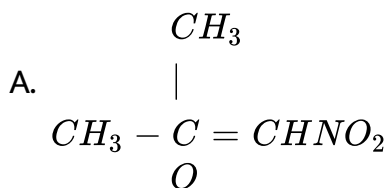
D. 1-Nitroprop-2-ene.

**Answer: C**



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33. The product formed with nitromethane is treated with acetone in the presence of a base is



Answer: A



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34. Pure m-bromotoluene can be obtained by

- A. Bromination of toluene
- B. Friedel Crafts reaction of bromobenzene with  $CH_3Cl$
- C. Bromination of nitrobenzene followed by replacement of nitro group with methyl group
- D. None of these.

**Answer: D**



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35. Ethylamine reacts with nitrosyl chloride (NO) to form

- A. Ethyl chloride
- B. Ethyl alcohol

C. Ethyl nitrite

D. Nitroethane.

**Answer: A**



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**36.** A  $1^\circ$  aliphatic nitro compound when treated with  $H_2SO_4$  gives

A. an aldehyde

B. a carboxylic acid

C. an alcohol

D. None of these.

**Answer: B**



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37. A  $1^\circ$  aliphatic nitro compound is first converted into carbanion salts with  $NaOH$ . When this salt is treated with  $H_2SO_4$  the product formed is

- A. an aldehyde
- B. an alcohol
- C. a carboxylic acid
- D. None of these.

**Answer: A**



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38. Hydroazobenzene on treatment with  $H_2SO_4$  gives

- A. Azobenzene

B. Benzidine

C. Azoxybenzene

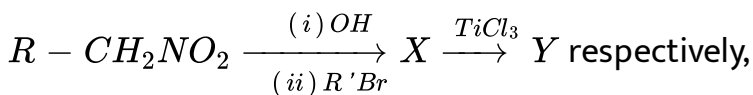
D. Azoxybenzene-4-sulphonic acid.

**Answer: B**



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39. The products X and Y in the following reaction are



A.  $RR'CHNO_2$ ,  $RR'CO$

B.  $RR'CO$ ,  $RR'CHNO_2$

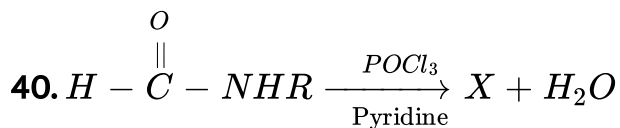
C.  $RR'CHNO_2$ ,  $RCH = NOR$

D.  $RCHNOR'$ ,  $R'R'C=NOH$  (2)

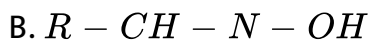
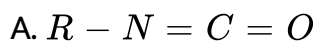
**Answer: B**



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In this reaction X is



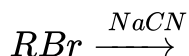
**Answer: D**



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1. Select incorrect statement

- A. Methyl cyanide is reduced to methyl amine by  $LiAlH_4$
- B. Methyl isocyanide is hydrolysed to methylamine
- C. Homologated  $1^\circ$  amine is obtained in the process



- D. Acetamide is reduced to ethylamine by  $LiAlH_4$ .

Answer: A

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2.  $H_2O$  is reduce with  $S_n / HCl$ . Product formed

- A.  $RNH_2$
- B.  $RNHO$
- C.  $RNH_3^+$

D.  $R_3NH$ .

**Answer: C**



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3.  $RNH_2$  can be converted into R, NH and no other amine by

A. its reaction with RX

B. its reaction with  $(CH_3Cl / KOH, \Delta)$  followed by reaction

C. its reaction with  $(CHCl_3 / KOH, \Delta)$  followed by hydrolysis

D. all of the above.

**Answer: B**



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4. Which is general order of basicity for water and amines

- A. alkanamine < arylamines < water
- B. alkanamines > aryl amines > water
- C. arylamines > alkanamines > water
- D. arylamines > water > alkanamines.

**Answer: B**



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5. Consider following hydrogen-bonded amines I and II



Select the correct statement (s)

- A. In I, water is electron-donor while amine is electron acceptor.



- B. In II amine is electron donor while water is electron acceptor
- C. Both are correct statement
- D. None of the above statement is correct.

**Answer: C**

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6. Which is the strongest conjugate acid ?

A. 

B.  $(CH_3)_2NH^+$

C. 

D. 

**Answer: C**

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7. When  $(CH_3)_3CNH_3^+ Cl^-$  is heated, product is

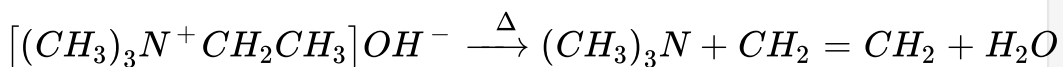
- A.  $(CH_3)_3CCl, NH_4Cl$
- B.  $(CH_3)_2C = CH_2, NH_4Cl$
- C.  $(CH_3)_3CNH_2, HCl$
- D. None of these.

Answer: B



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8. Select correct statement (s), about the following reaction



- A. This reaction is called Hofmann elimination

B.  $OH^-$  ion functions as a base in an  $E_2$  elimination

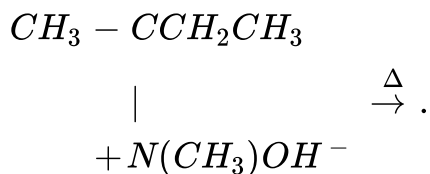
C. Less substituted alkene is the predominant alkene

D. All are correct statements.

**Answer: D**

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9. Major alkene of the following reaction is



A.  $CH_3CH = CHCH_3$

B.  $CH_2 = CHCH_2CH_3$

C.  $(CH_3)_2C = CH_2$

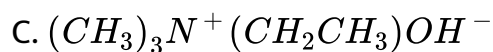
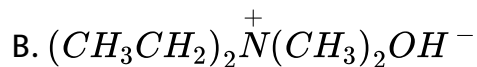
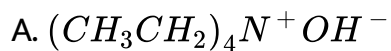
D.  $(CH_3)_2C = C(CH_3)_2$ .

Answer: B



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10. Exhaustive methylation of  $CH_3CH_2NH_2$  forms



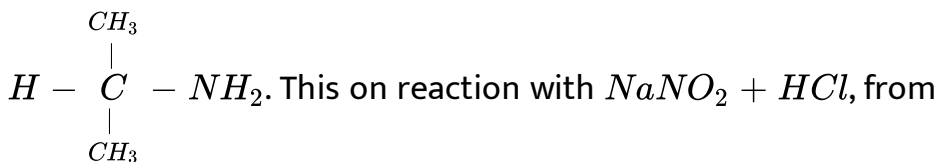
D. None of the above

Answer: C



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11. Following 2° amine has chiral carbon as indicated

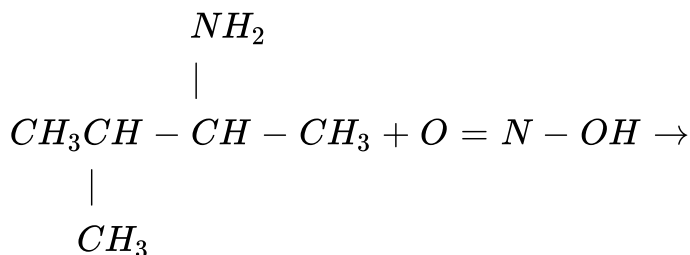


- A. 1° alcohol with retention of configuration
- B. 2° alcohol with inverted configuration
- C. racemic mixture of 2° alcohol
- D. racemic mixture of 1° alcohol.

**Answer: C**

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12. Major product of the following reaction is





Select correct statement (s)

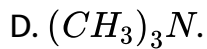
- A. Reaction I is called Hofmann bromamide reaction
- B. Reaction II is called carbyl amine reaction
- C. A can be converted into isomeric using  $P_2O_5$  and C can be converted into B by hydrolysis
- D. All are correct statements.

**Answer: D**

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14. Which is soluble in  $NONO_2$  and dil  $HCl$  mixture forming salt ?

- A.  $(CH_3)_2NH_2$
- B.  $(CH_3)_2CHNH_2$
- C.  $(CH_3)_2NH$

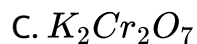
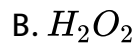


**Answer: D**



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15. Tertiary amine is oxidized to oxide by



D. all of these

**Answer: B**



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16. Cope elimination is an intramolecular,  $E_2$  reaction because

- A. It is given by tertiary amine
- B. It is given by tertiary amine oxide containing  $\beta$ -hydrogen
- C. The nucleophile and leaving group are in the same molecule
- D. The less substituted alkene is the major product.

Answer: C



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17. Cope elimination

- A. is a syn elimination reaction
- B. It is given by tertiary amine oxide containing  $\beta$ -hydrogen
- C. is intramolecular  $E_2$  reaction

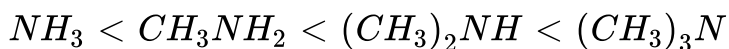
D. follows all the above facts.

**Answer: D**



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**18.** In gas phase, the basicities of amines increase in the order



This is due to

A. Increase in molar mass

B. Availability of one pair of electrons of atom as a result of electron donating in due to effect of methyl groups

C. increase in dispersion forces

D. increase in H-bonding.

**Answer: B**



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19. In aqueous phase basicity of amines is in order



It is due to the following facts

- A. ammonium ions in solution are stabilised not only by alkyl groups but also by hydrogen bond donation to the solvent.
- B. Addition of the proton increases crowding and thus strain set up which being highest in  $3^\circ$  amines decreases its basic character
- C. both of the above
- D. none of the above

**Answer: C**



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20. Which of the following chemicals are used to manufacture methyl isocyanate that caused Bhopal tragedy

(i) Methyl amine (ii) Chloroform/KOH

(iii) Phosphine (iv) Dimethylamine

A. (i) and (iii)

B. (iii) and (iv)

C. (i) and (ii)

D. (ii) and (iv)

**Answer: C**



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