CHEMISTRY

BOOKS - UNIVERSAL BOOK DEPOT 1960 CHEMISTRY (HINGLISH)

NITROGEN CONTAINING COMPOUNDS

Ordinary Thinking Introduction Of Nitrogen Containing Compounds

1. Triaminobenzene is a _____.

A. 2° amine

B. 3° amine

C. 1° amine

D. Quarternary salt

Answer: C

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

A. Tert-butylamine

B. Ethylamine

C. Sec-butylamine

D. Iso-butylamine

Answer:

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3. Choose the incorrect statement

A. Primary amines show intermolecular hydrogen bonds

B. Tert-butylamine is a primary amine

C. Tertiary amines do not show intermolecular hydrogen bonds.

D. Isopropylamine is a secondary amine.

Answer: D

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4. $(CH_3)_2 \underset{\underset{NH_2}{|}}{C} . CH_2 . CO . CH_3$

A. Diacetone

B. Acetoneamine

C. Diacetoneamine

D. Aminoacetone

Answer: C

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5. The structural formula of methyl amino methane is

A. $(CH_3)_2CHNH_2$

B. $(CH_3)_3N$

C. $(CH_3)_2NH$

D. CH_3NH_2

Answer: C

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6. Acetonitrile is

A. C_2H_5CN

B. CH_3CN

C. CH_3COCN

D. $C_6H_5CH_2CN$

Answer: B

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7. Leakage of which gas was responsible for the Bhopal tragedy in 1984

A. $CH_3 - N = C = O$

B. $CH_3 - C - N = S$

C. $CHCl_3$

D. C_6H_5COCl

Answer: A

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8. The correct IUPAC name for

$CH_2 = CH - CH_2 - NH - CH_3$ is

A. Secondary amine

B. Primary amine

C. Tertiary amine

D. None of these

Answer: A

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9. The molecular formula of benzonitrile is _____.

A. C_6H_5CN

B. C_6H_5NC

C. C_6H_5CNO

D. C_6H_5NCO

Answer: A

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10. Which of the following is not a nitro-derivative

A. $C_6H_5NO_2$

B. CH_3CH_2ONO

C. 

D. $C_6H_4(OH)NO_2$

Answer: B

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11. A secondary amine is

A. An organic compound with two $-NH_2$ groups

B. A compound with two carbon atoms and an $-NH_2$ group

C. A compound with as $-NH_2$ group on the carbon atom in number 2 position.

D. A compound in which two of the hydrogens of NH_3 have been replaced by organic groups.

Answer: D

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12. In alkyl cyanide alkyl group attached with

A. C of CN group

B. N of CN group

C. Either C or N of CN group

D. Both C and N of CN group

Answer: A

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13. Cyanide ion is

A. Nucleophilic

B. Electrolhilic

C. Strongly acidic

D. Non-reactive and neutral.

Answer: A

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14. Compound containing both $-NH_2$ and $-COOH$ groups are called

A. Diamines

B. Unknown

C. Amino acids

D. Enzymes

Answer: C

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15. Which of the following is 1° amine ?

A. Ethylene diamine

B. Dimethyl amine

C. Trimethyl amine

D. N-methyl aniline.

Answer: A

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Preparation Of Nitrogen Containing Compounds

1. Phenyl isocynanides are preapred from which of the following reactions

A. Rosenmund's reaction

B. Carbylamine reaction

C. Reimer-Tiemann reaction

D. Wurtz reaction.

Answer: B

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

A. Acetic acid

B. Bromoacetic acid

C. Methyl amine

D. Ethyl amine.

Answer: C

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3. Which one of following on reduction with lithium aluminium hydride yields a secondary amine ? .

A. Nitroethane

B. Methylisocyanide

C. Acetamide

D. Methyl cyanide

Answer: B

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4. In this reaction

$C_6H_5NH_2 + HCl + NaNO_2 \rightarrow X$. Product X is

A. Aniline hydrochloride

B. Nitro aniline

C. Benzenediazonium chloride

D. None of these

Answer: C

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5. The rate determining step for the preparation of nitrobenzene from benzen is

A. Removal $\overset{+}{N}O_2$

B. Removal of $\overset{+}{N}O_3$

C. Formation of $\overset{+}{N}O_2$

D. Formation of $\overset{+}{N}O_3$

Answer: C

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

A. $ArX + KCN$

B. $ArN_2^+ + CuCN$

C. $ArCONH_2 + P_2O_5$

D. $ArCONH_2 + SOCl_2$

Answer: A

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7. $CH_3Cn \xrightarrow{Na + C_2H_2OH} X$

The compound X is

A. CH_3CONH_2

B. $CH_3CH_2NH_2$

C. C_2H_6

D. CH_3NHCH_3

Answer: B

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8. Nitrobenzene combines with hydrogen in the presence of platinum to produce.

A. Toluene

B. Benzene

C. Aniline

D. Azobenzene

Answer: C

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9. Azo-dyes are prepared from:

A. Aniline hydrochloride

B. Salicylic acid

C. Benzaldehyde

D. Chlorobenzene

Answer: A

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10. Gabriel phthalimide synthesis is used in the preparation of

A. Primary aromatic amine

B. Secondary amine

C. Primaryy alphatic amine

D. Tertiary amine.

Answer: C

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11. Aniline is usually purified by

A. Steam distillation

B. Simple distillation

C. Vacuum distilation

D. Extraction with a solvent.

Answer: A

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12. Ethylamine can be obtaine by te

A. Action of NH_3 on ethyl iodide

B. Action of NH_3 on ethyl alcohol

C. Both a and b

D. None of the above

Answer: C

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13. In acid medium nitrobenzene is reduced to aniline as shown in the reaction

$C_6H_5 - NO_2 + 6[H] \rightarrow C_6H_5 - NH_2 + 2H_2O$ The reducing agent used in this reaction is...

A. $LiAIH_4$

B. Sn / HCl

C. Na/alcohol

D. H_2 / Ni

Answer: B

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

A. $RX + NH_3 \rightarrow$

B. $RCH = NOH + [H] \xrightarrow[C_2H_5OH]{Na}$

C. $RCN + H_2O \xrightarrow{H^+}$

D. $RCONH_2 + 4H \xrightarrow{LiAlH_4}$

Answer: C

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15. $CH_3CONH_2 \xrightarrow{Na+ROH} Z + H_2O$, Z is

A. $CH_3CH_2NH_2$

B. CH_3CH_2NC

C. $CH_3CH_2CH_3$

D. NH_2CONH_2

Answer: A

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16. In the following reaction,

$$X \xrightarrow{\text{Bromination}} Y \xrightarrow[HCl]{NaNO_2} Z \xrightarrow[C_2H_5OH]{\text{Boiling}} \text{Tribromobenzene, } X\text{is}$$

A. Benzoic acid

B. Salicylic acid

C. Pehnol

D. Aniline

Answer: D

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17. Which of the following will not give a primary amine ?

A. $CH_3CONH_2 \xrightarrow{KOHBr_2}$

B. $CH_3Cn \xrightarrow{LiAlH_4}$

C. $CH_3Nc \xrightarrow{LiAlH_4}$

D. $CH_3CONH_2 \xrightarrow{LiAlH_4}$

Answer: C

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18. Molecular formula of chloropicrin is

A. $CHCl_3NO_2$

B. CCl_3NO_3

C. CCl_2NO_2

D. CCl_3NO_2

Answer: D

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19. $CH_3NO_2 \xrightarrow{Sn+HCl} CH_3X$, the 'X' contain

A. $-NH_2$

B. $-COOH$

C. $-CHO$

D. $(CH_3CO)_2O$

Answer: A

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20. Aniline is prepared in presence of Fe/HCl from

A. Benzene

B. Nitrobenzene

C. Dinitrobenzene

D. None of these

Answer: B

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21. Which of the following reagents can be used to convert primary amides into primary amines containing the same number of carbon atoms ?

A. $Br_2 + NaOH$

B. $LiAIH_4$

C. $Sn + HCl$

D. $Na + C_2H_5OH$

Answer: B

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22. The diazonium salts are the reaction products in presence of excess of mineral acid with nitrous acid and

A. Primary aliphatic amine

B. Secondary aromatic amine

C. Primary aromatic amine

D. Tertiary aliphatic amine.

Answer: C

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23. The end product of the reaction

Ethyl amine $\xrightarrow{HNO_2} A \xrightarrow{PCl_3} B(KCN) \rightarrow C$ is

A. Ethyl amine

B. Diethyl amine

C. Propane nitrite

D. Triethyl amine

Answer: C

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24. Secondary amines could be prepared by

A. Reduction of nitriles

B. Hofmann bromamide reaction

C. Reduction of amides

D. Reduction of isonitriles.

Answer: D

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25. The reaction of $CHCl_3$ and alcohol KOH with p-toluidine gives

A. 

B. 

C. 

D. 

Answer: C

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26. In the series of reaction

$C_6H_5NH_2 \xrightarrow[0-5^\circ C]{NaNO_2/HCl} X \xrightarrow[CH_2O]{HNO_2} Y + N_2 + HClX$ and Y are respectively.

A. $C_6H_5 - N = N - C_6H_5, C_6H_5N_2^{\oplus}Cl^{\oplus}$

B. $C_6H_5N_2^{\oplus}Cl^{\oplus}, C_6H_5 - N = N - C_6H_5$

C. $C_6H_5N_2^{\oplus}Cl^{\oplus}, C_6H_5NO_2$

D. $C_6H_5NO_2, C_6H_6$

Answer: C

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27. When chlorobenzene is treated with NH_3 in presence of Cu_2O in xylene is 570 K. The product obtained is

A. Benzylamine

B. Diazonium salt

C. Schiff's base

D. Aniline

Answer: D

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28. In the reaction

$$R-\overset{\overset{O}{||}}{C}-OH \xrightarrow{H_3O^+} X \xrightarrow{(H)} RCH_2NH_2,\ 'X'\ \text{is}$$

A. Isonitrile

B. Nitrile

C. Nitrite

D. Oxime

Answer: B

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29. Which of the following gives primary amine on reduction?

A. $CH_3 - CH_2 - \overset{O}{\overset{||}{N}} \to O$

B. $CH_3 - CH_2 - O - N = O$

C. $CH_3CH_2NO_3$

D. None of these

Answer: A

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30. Which of the following is converted into an alcohol on treatment with HNO_2

A. Ethyl amine

B. Aniline

C. Dimethyl amine

D. Triethyl amine

Answer: A

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31. Reduction of nitroalkanes in neutral medium (e.g. Zn/NH_4Cl) forms mainly

A. $R - NH_2$

B. $R - NHOH$

C. $R - N = N - Cl$

D. All of these

Answer: C

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32. Identify 'B' in the reaction

Acetamide $\xrightarrow[\Delta]{P_2O_5} A \overset{4H}{R} arr B$

A. CH_3NH_2

B. $CH_3CH_2NH_2$

C. CH_3CN

D. CH_3COONH_4

Answer: B

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33. What is the initial product of the acidic hydrolysis of a cyanide

A. A primary amide

B. An isocyanide

C. An isocyanate

D. A nitrile

Answer: A

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34. The treatment of acylazide $(RCON_3)$ with acidic or alkaline medium gives.

A. $RCONH_2$

B. $R - NH_2$

C. RCH_2NH_2

D. $RCOCH_2NH_2$

Answer: B

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35. $CH_3CH_3 + HNO_3 \xrightarrow{675K}$

A. $CH_3CH_2NO_2$

B. $CH_3CH_2NO_2 + CH_3NO_2$

C. $2CH_3NO_2$

D. $CH_2 = CH_2$

Answer: B

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36. KCN reacts readily to give a cyanide with

A. Ethyl alcohol

B. Ethyl bromide

C. Bromobenzene

D. Chlorobenzene

Answer: B

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37. Given the following sequence of reaction

$$CH_3CH_2I \xrightarrow{NaCN} A \xrightarrow[\text{Partial Hydrolysis}]{OH^-} B \xrightarrow{Br_2/NaOH} C$$

The major product 'C' is

A. $CH_3CH_2NH_2$

B. $CH_3CH_2\underset{\underset{O}{||}}{C} - NHBr$

C. $CH_3CH_2 - COONH_4$

D. $CH_3CH_2\underset{\underset{O}{||}}{C} = NBr_2$

Answer: A

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38. which of the following is not the correct reaction of aryl diazonium salts?

A. $C_6H_5N_2^+Cl^- + Cu_2Cl_2 \rightarrow C_6H_5Cl$

B. $C_6H_5N_2^+Cl^- + HBF_4 \xrightarrow{\text{Heat}} C_6H_5F$

C. $C_6H_5N_2^+Cl^- + H_3PO_2 \rightarrow C_6H_5PO_4$

D. $C_6H_5N_2^+Cl^- + SnCl_2/HCl \rightarrow C_6H_5NHNH$

Answer: C

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39. $CH_3CH_2Br \xrightarrow[\Delta]{Aq.KOH} A \xrightarrow[\Delta]{KMnO_4/H^+} B \xrightarrow[\Delta]{NH_3} C \xrightarrow[\text{Alkali}]{Br_2} D$, D is

A. CH_3Br

B. CH_3CONH_2

C. CH_3NH_2

D. $CHBr_3$

Answer: C

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40. For the preparation of p-nitroiodobenzene from p-nitroaniline, the best method is

A. $NaNO_2 / HCl$ followed by KI

B. $NaNO_2 / HCl$ followed by CuCN

C. $LiAlH_4$ followed by I_2

D. $NaBH_4$ followed by I_2

Answer: A

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41. One of the product of the following reaction is

$KCNO + (NH_4)_2SO_4 \xrightarrow{\Delta}$

A. NH_4NO_3

B. NH_2CONH_2

C. N_2

D. NO_2

Answer: B

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42. The best method for preparation of Me_3CCN is

A. To react Me_3COH with HCN

B. To react Me_3CBr with NaCn

C. To react Me_3CMgBr with CICN

D. To react Me_3Cli with NH_2CN

Answer: C

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43. Nitrosobenzene can be prepared from aniline and which of the following

A. Ethanol

B. Acetaldehyde

C. Acetone

D. Acetic anhydride

Answer: D

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44. Assertion(A):The nitrating reagent for carrying out nitration of benzene contains conc. H_2SO_4 and conc. HNO_3.

Reason: In the presence of conc. H_2SO_4. HNO_3 acts as a base and produces NO_2^+ ions.

A. If both assertion and reason are true and the reason is the correct explanantion of the assertion.

B. If both assertion and reason are true but reason is not the correct explanantion of the assertion.

C. If assertion is true but reason is false.

D. If the assertion and reason both are false.

Answer: A

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45. Assertion: In order to convert R-Cl to pure $R-NH_2$, Gabriel pthalimide synthesis can be used.

Reasaon: With proper choice of alkyl halides. Pthalimide synthesis can be used to prepare 1°, 2° or 3° amines.

A. If both assertion and reason are true and the reason is the correct explanantion of the assertion.

B. If both assertion and reason are true but reason is not the correct explanantion of the assertion.

C. If assertion is true but reason is false.

D. If the assertion and reason both are false.

Answer: C

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46. Assertion: Ammonolysis of alkyl halides invovles the reaction between alkyl halides and alcoholic ammonia.

Reason: Reaction can be used to prepare only 2° amines.

A. If both assertion and reason are true and the reason is the correct explanantion of the assertion.

B. If both assertion and reason are true but reason is not the correct explanantion of the assertion.

C. If assertion is true but reason is false.

D. If the assertion and reason both are false.

Answer: C

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47. Assertion: The reaction between a diazo salt and an aromatic amine or a phenol, giving an aminoazo or hydroxyazo compounds is called coupling reaction.

Reason: Condensation of diazonium salt with phenol is carried out in weakly acidic medium.

A. If both assertion and reason are true and the reason is the correct explanantion of the assertion.

B. If both assertion and reason are true but reason is not the correct explanantion of the assertion.

C. If assertion is true but reason is false.

D. If the assertion and reason both are false.

Answer: C

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48. Which of the following reactions is appropriate for converting acetamide to methamine?

A. Hoffmann hypobromamide reaction

B. Stephens reaction

C. Gabricls phtalimide syntheis

D. Carbylamine reaction.

Answer: A

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49. Consider the reactions.

Identify A,X,Y and Z

A. A-Methoxymethane, X-Ethanol,Y-Ethanoic acid, Z-Semicarbazide

B. A-Ethanal,X-Ethanol,Y-But-2-enal,Z-Semicarbazone

C. A-Ethanol,X-Acetaldehyde,Y-Butanone,Z-Hydrazone

D. A-Methoxymethane,X-Ethanoic acid, Y-Acetate ion, Z-Hydrazine.

Answer: B

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50. Some reactions of amines are given. Which one is not correct.

A. 

B. $CH_3CH_2NH_2 + HNO_2 \rightarrow CH_3CH_2OH + N_2$

C. $CH_3NH_2 + C_6H_5SO_2Cl \rightarrow CH_3NHSO_2C_6H_5$

D. $(CH_3)_2NH + NaNO_2 + Hcl \rightarrow (CH_3)_2N - N = O$

Answer: A

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51. Identify the product 'Z' in the following sequence of reactions.

$$CH_3CN \xrightarrow{Na+C_2H_5OH} X \xrightarrow[H_2O]{HNO_2} Y \xrightarrow[H_2SO_4]{K_2Cr_2O_7} Z$$

A. CH_3CHO

B. CH_3CONH_2

C. CH_3COOH

D. CH_3CH_2NHOH

Answer: C

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

A. o-and p-nitroanilines

B. m-nitroanilines

C. A black tarry matter

D. No reaction

Answer: C

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53. The mojor product $(70\,\%$ to $80\,\%)$ of the reaction between m-dinitrobenzene with NH_4HS is

A. 

B. 

C. 

D. 

Answer: B

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54. The strongest base is

A. 

B. 

C. 

D. 

Answer: A

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55. Melting points are normally highest for

A. Tertiary amides

B. Secondary amides

C. Primary amides

D. Amines.

Answer: C

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56. Which of the following chemicals are used to manufacture methy1 isocyanate that caused Bhopal Tragedy ?

Methylamine

(ii) Phosgene

(iii) Phosphine (iv) Dimethylamine .

A. Methylamine

B. Phosgene

C. Phosphine

D. Dimethylamine.

Answer: C

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57. $CH_3CH_2C \equiv N \xrightarrow{X} CH_3CH_2CHO$

the compound X is :

A. $SnCl_2 / HCl / H_2O$, boil

B. $H_2 / Pd - BaSO_4$

C. $LiAIH_4 /$ ehter

D. $NaBH_4 / \text{ether} / H_3O^+$

Answer: A

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58. Which of the following is the weakest base ?

A. Ammonia

B. Methylamine

C. Dimethylamine

D. Trimethylamine

Answer: A

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59. Most basic compound is

A. $C_6H_5NH_2$

B. NH_3

C. CH_3NH_2

D. $(C_6H_5)_2NH$

Answer: C

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60. Ethyl amine o acetylation gives

A. N-ethyl acetamide

B. Acetamide

C. Methyl acetamide

D. None

Answer: A

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61. $R-NH-COH \xrightarrow[\text{pyridine}]{POCl_3}$ product. In the given reaction what will be the product.

A. $R-N=C=O$

B. $R-N \equiv C^-$

C. $R-C \equiv N$

D. None of these

Answer: B

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62. Benzldehyde condenses with N, N-dimethylaniline in presence of anhydrous $ZnCl_2$ to give

A. Michler's ketone

B. Azo dye

C. Malachite green

D. Buffer yellow

Answer: C

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63. When primary amines react with nitrous acid, the gas evolved is

A. N_2

B. NH_3

C. CO_2

D. CO

Answer: A

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64. Hydrolysis of cyanogen gives

A. Oxalic acid $+NH_3$

B. Oxalic acid

C. NH_3

D. None of these

Answer: A

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65. Which has the highest pK_b value?

A. $R_3C - NH_2$

B. R_2NH

C. RNH_2

D. NH_3

Answer: D

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66. Primary amines can be distinguished from secondary and tertiary amines by reacting with

A. Chloroform and alcoholic KOH

B. Methyl iodide

C. Chlororform alone

D. Zinc dust.

Answer: A

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67. Ethyl amine undergoes oxidation in the presence of $KMnO_4$ to form

A. An acid

B. An alcohol

C. An aldehyde

D. A nitrogen oxide.

Answer: C

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68. In the explosive amatol, TNT is mixed with

A. Ammonium citrate

B. Ammonium nitrate

C. Ammonium oxalate

D. Ammonium sulphate

Answer: B

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69. Determine the end prodcut of the following reactions

$$C_2H_5NH_2 \xrightarrow{HNO_2} A \xrightarrow{PCL_5} B \xrightarrow{NH_3} C$$

A. Ethyl cyanide

B. Ethyl amine

C. Methyl amine

D. Acetamide

Answer: B

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70. Nitrobenzene on further excessive nitration gives

A. Trimitrobenzene

B. mi-dinitrobenzene

C. p-dinitrobenzene

D. All of these

Answer: B

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71. When acetamide is treated with HNO_2, the gas is evolved

A. H_2

B. O_2

C. N_2

D. CH_4

Answer: C

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72. Which one is less alkaline?

A. 

B. 

C. 

D. All of these

Answer: A

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

A. $C_6H_5N=O$

B. $C_6H_5NH-NH-C_6H_5$

C. $C_6H_5-N=N-C_6H_5$

D. $C_6H_5N=\overset{\overset{O}{\uparrow}}{N}-C_6H_5$

Answer: A

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74. 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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75. The fusion of sodium with amine gives mainly

A. $NaCN$

B. NaN_3

C. $NaSCN$

D. $NaNO_2$

Answer: A

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

A. Ethanoic acid

B. Methylamine

C. Methyl alcohol

D. Formic acid

Answer: A

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

A. Trimethylamine

B. Aniline

C. Dimethylamine

D. Methylamine

Answer: C

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78. Aniline reacts with which of these to form Schiff's base ?

A. Acetic acid

B. Benzaldehyde

C. Acetone

D. NH_3

Answer: B

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79. Hydrolysis of phenyl isocyanide forms :

A. Benzoic acid

B. Formic acid

C. Acetic acid

D. None of these

Answer: B

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80. N_2 gas will not be evolved upon reaction of HNO_2 with which of the following amines ?

A. 1°

B. 2°

C. 3°

D. Both b and c

Answer: D

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81. An aniline on nitration gives

A. 

B. 

C. 

D. Both a and c

Answer: D

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82. Which of the following does not reduce Tollens reagent .

A. CH_3CHO

B. C_6H_5CHO

C. $HCOOH$

D. $C_6H_5NO_2$

Answer: D

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83. Which one of the following statements about CH_3CN is not true?

A. Its IUPAC name is ethanenitrile

B. The bond between C and N is a triple bond

C. The C-C-N bond angle in 180°

D. The carbon-carbon bond is longer than the carbon-nitrogen bond.

Answer: C

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84. Anilinum hydrogensulphate on heating with sulphuric acid at 453-473K produces

A. Benzene sulphonic acid

B. Anthranilic acid

C. Aniline

D. m-aminobenzene sulphonic acid

Answer: C

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85. The major product in the reaction of N-phenylbenzamide with Br_2 / Fe is

A. 

B. 

C. 

D. 

Answer: B

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

A. Aniline hydrochloride

B. Phenyl hydroxylamine

C. p-aminophenol

D. Azobenzene

Answer: D

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87. The product P in the reaction

A. 

B. 

C. 

D. 

Answer: D

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88. Amine that cannot be prepared by Gabriel - phthalimide synthesis is:

A. Aniline hydrochloride

B. Benzyl amine

C. Methyl amine

D. Iso-butylamine

Answer: A

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89. Among the following compounds $C_3H_7NH_2NH_3CH_3NH_2C_2H_5NH_2$ and $C_6H_5NH_2$ the least basic compounds is .

A. $C_3H_7NH_2$

B. NH_3

C. CH_3NH_2

D. $C_6H_5NH_2$

Answer: D

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90. n-butylamine(I), diethylamine (II) and N,N-dimethylethylamine (III) have the same molar mass. The increasing order of their boiling point is

A. $III < II < I$

B. $I < II < III$

C. $II < III < I$

D. $II < I < III$

Answer: A

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91. What is obtained when nitrobenzene is treated sequesntially with (i) NH_4Cl / Zn dust and (ii) $H_2SO_4 / Na_2Cr_2O_7$?

A. Meta-chlorobenzene

B. Para-chloronitrobenzene

C. Nitrosobenzene

D. Benzene

Answer: C

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92. Mark the correct statement

A. Methyl amine is slightly acidic

B. Methyl amine is less basic than NH_3

C. Methyl amine is stronger base than NH_3

D. Methyl amine forms salts with alkalies

Answer: C

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93. Aniline and methyl amine can be differentiated by

A. Reaction with chloroform and aqueous solution of KOH

B. Diazotisation followed by coupling with phenol

C. Reaction with HNO_2

D. None of these

Answer: B

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94. Primary and secondary amines are distinguished by:

A. Br_2 / KOH

B. $HClO_4$

C. HNO_2

D. NH_3

Answer: C

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95. CH_3CN is known as acetonitrile because

A. It contains an aceto group

B. On hydrolysis it gives acetic acid

C. Both a and b

D. None of these

Answer: B

Watch Video Solution

96. The amine which can react with $C_6H_5 - SO_2 - Cl$ to form a product insoluble in alkali shall be

A. Primary amine

B. Secondary amine

C. Tertiary amine

D. Both primary and secondary amines.

Answer: B

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97. An isocyanide on hydrolysis gives

A. An amide

B. A carboxylic acid and ammonia

C. A N-Substitued amide

D. A 1°-amine and formic acid.

Answer: D

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98. $C_6H_5NH_2 \xrightarrow{NaNO_2/HCl} X \xrightarrow{Cu_2(CN)_2} Y \xrightarrow{H_2 \frac{\emptyset}{H^+}} Z$ Z is identified as

A. $C_6H_5 - NH - CH_3$

B. $C_6H_5 - COOH$

C. $C_6H_5 - CH_2 - NH_2$

D. $C_6H_5 - CH_2 - COOH$

Answer: B

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99. $R - \overset{O}{\overset{||}{C}}NH_2 \rightarrow RCH_2NH_2$

Which one of the following reducing agents is likely to be the most effective in bringing about the following change?

A. $H_2 - Ni$

B. $NaBH_4$

C. $LiAIH_4$

D. Na-alcohol

Answer: A

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100. Thermal decomposition of

A. 

B. 

C. 

D. 

Answer: A

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101. The correct order of basicities of $PhNH_2(A)$, and $Ph_2NH(B)$ and cyclohexyl$-NH_2(C)$ is

A. $A > B > C$

B. $A > C > B$

C. $C > A > B$

D. $C > B > A$

Answer: C

Watch Video Solution

102. What is the major product of the following reactions

A. 

B. 

C. 

D. 

Answer: C

View Text Solution

103. Which one of the following is not a base

A. N_2H_4

B. NH_2OH

C. $(CH_3)_3N$

D. HN_3

Answer: D

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104. In gattermann reaction a diazonium group is replaced by X using Y.

What are X and Y?

X	Y
$(a)Cl^-$	Cu/HCl
$(b)Cl^+$	$CuCl_2/HCl$
$(C)Cl^-$	$CuCl_2/HCl$
$(d)Cl_2$	Cu_2O/HCl

A. $\begin{matrix} X & Y \\ Cl^{\oplus} & Cu/HCl \end{matrix}$

B. $\begin{matrix} X & Y \\ Cl^{\oplus} & CuCl_2/HCl \end{matrix}$

C. $\begin{matrix} X & Y \\ Cl^{\oplus} & CuCl_2/HCl \end{matrix}$

D. $\begin{matrix} X & Y \\ Cl_2 & Cu_2O/HCl \end{matrix}$

Answer: A

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105. The product formed when benzene is nitrated by fuming nitric acid is

A. m-dinitrobenzene

B. Nitrobenzene

C. Sym-trinitrobenzene

D. None of these

Answer: C

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106. On heating acetamide in presence of P_2O_5, which of the following is formed

A. Ammnium acetate

B. Acetonitrile

C. NH_3

D. Methylamines

Answer: B

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107. Which statement is not correct

A. Amines form hydrogen bond

B. Ethyl amine has higher boiling point than propane

C. Methyl amine is more basic than ammonia

D. Dimethyl amine is less basic than methyl amine.

Answer: D

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108. The reaction of HNO_2 with 'A' gives quaternary ammonium salt. A is

A. Methyl amine

B. Dimethyl amine

C. Trimethyl amine

D. Aniline

Answer: C

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109. Which of the following compound gives dye test ?

A. Aniline hydrochloride

B. Methylamine

C. Diphenylamine

D. Ethylamine

Answer: A

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

A. CH_3NH_2

B. $(CH_3)_2NH$

C. $(CH_3)_3N$

D. None of these

Answer: C

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111. Which of the following compounds reacts with $NaNO_2$ and HCl at 0-$4^\circ C$ to give alcohol/phenol?

A. $C_6H_5CH_2NHCH_3$

B. $(CH_3)_2NH$

C. CH_3NH_2

D. $C_6H_5NH_2$

Answer: D

Watch Video Solution

112. Which of the following is most basic towards $B(CH_3)_3$

A. $4-CH_3C_5H_4N$

B. $(C_2H_5)_3N$

C. NH_3

D. $2 - CH_3C_5H_4N$

Answer: A

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113. Which of the following is called a carbylamine?

A. RCN

B. $RCONH_2$

C. RCH=NH

D. RNC

Answer: D

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114. Which of the following is not used as an explosive

A. Trinitrotoluene

B. Trinitrobenzene

C. Picric acid

D. Nitrobenzene

Answer: D

Watch Video Solution

115. Ethyl amine on heating with CS_2

in presence of $HgCl_2$ forms

A. C_2H_5NCS

B. $(C_2H_5)_2S$

C. $(C_2H_5)_2CS$

D. $C_2H_5(CS)_2$

Answer: A

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116. Mustard gas is obtained by

A. The action of dilute acids on mustard seeds

B. Treating ethylene with mustard oil

C. Treating sulphur chloride with ethylene

D. None of these

Answer: C

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117. The reaction

$R_2C = NNH_2 \xrightarrow{C_2H_5Ona} R_2CH_2 + N_2$ is called

A. Clemmensen reduction

B. Hunsdiecker reaction

C. Tischenko reaction

D. Wolff-Kishner reduction.

Answer: D

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118. The following compound can be classified as N-N dimethyl propanamine, N-methyl aniline and aniline dimethl propanamine

A. Primary, secondary,tertiary

B. Primary,tertiary,secondary

C. Secondary,tertiary,primary

D. Tertiary,primary,secondary.

Answer: C

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119. $RCOCl + 2Me_2NH \rightarrow A + Me_2NH_2Cl^-$. Here A is

A. 

B. $RCONH_2$

C. $RCONHMe$

D. $(RCO)_2NH$

Answer: A

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120. 

Product 'A' in above reaction is

A. 

B. 

C. 

D. None of these

Answer: B

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121. Product obtained by electrolytic reduction of nitrobenzene in presence of H_2SO_4 s

A. o-amino phenol

B. m-amino phenol

C. p-amino phenol

D. None of these

Answer: C

Watch Video Solution

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

A. $(CH_3)_2NH$

B. CH_3NH_2

C. $C_6H_5NH_2$

D. CH_3CONH_2

Answer: D

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

A. Hinsberg method

B. Hofmann method

C. Wurtz reaction

D. Curtius reaction

Answer: C

Watch Video Solution

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

A. A schiff's base

B. An enamine

C. An imine

D. An amine.

Answer: B

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125. Toluene is nitrated and the resulting product is reduced with tin and hydrochloric acid. The product so obtained is diazotised and then heated with cuprous bromide. The reaction mixture so formed contains

A. Mixture of o-and p-dibromobenzenes

B. Mixture of o-and p-bromoanilines

C. Mixture of o-and m-bromotoluenes

D. Mixture of o-and p-bromotoluenes

Answer: D

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126. Activation of benzene by $-NH_2$ group can be reduced by treating the compound with

A. Dil. HCl

B. Ethyl alcohol

C. Acetic acid

D. Acetyl chloride.

Answer: D

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127. When acetamide is hydrolysed by boiling with acid, the product obtained is

A. Acetic acid

B. Ethylamine

C. Ethanol

D. Acetamide

Answer: A

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128. Which will not go for diazotisation

A. $C_6H_5NH_2$

B. $C_6H_5CH_2NH_2$

C. 

D. 

Answer: B

View Text Solution

129. Alkyl cyanides undergo Stephen redyction to produce

A. Aldehyde

B. Secondary amine

C. Primary amine

D. Amide

Answer: A

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130. On strong heating, ammonium acetate gives

A. Acetamide

B. Methyl cyanide

C. Urea

D. Formamide

Answer: B

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131. In the diazotisation of anline with sodium nitrite and hydrochloride acid, an excess of hydrochloric acid is used primarily to

A. Suppress the concentration of free aniline available for coupling

B. Suppress hydrolysis of phenol

C. Insure a stoichiometric amount of nitrous acid

D. Neutralize the base liberated.

Answer: A

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132. Complete the following reaction:

$RNH_2 + H_2SO_4 \rightarrow$

A. $[RNH_3]^+ HSO_4^-$ +F159:F170

B. $[RNH_3]_2^+ SO_4^{2-}$

C. $RNH_2 . H_2SO_4$

D. No reaction.

Answer: B

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133. n-Propylamine yields a volatile compound X on warning with alc alkali and chloroform X has an offensive odour. The structure of X is

A. $CH_3CH_2CH_2CN$

B. $(CH_3)_2CHCN$

C. $CH_3CH_2CH_2NC$

D. $(CH_3)_2CHNC$

Answer: C

Watch Video Solution

134. The product formed in the reaction of glycine with benzoyl chloride $+aq.\ NaOH$ is

A. $PhCOCH_2NH_2$

B. $PhCH_2NH_2$

C. $PhCONHCH_3$

D. $PhCONHCH_2CO_2H$

Answer: D

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135. Action of $NaNO_2$ + dil HCl on $ArNH_2$ yields $ArN_2^+Cl^-$. A similar reaction with cyclohexylamine will yield.

A. 

B. 

C. 

D. 

Answer: D

View Text Solution

136. Which one of the following nitro compounds when react with nitrous acid followed by treatment with alkali produces blue colour?

A. 2-methyl-2-nitropropane

B. 2-methyl-1-nitropropane

C. 2-nitropropane

D. Nitrobenzene

Answer: C

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137. Which of the following has the smell of bitter almonds

A. Nitromethane

B. Nitroethane

C. Nitrobenzene

D. Aniline

Answer: C

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138. Identify the product C in the series.

$$C_6H_5NO_2 \xrightarrow{FeHCl} A \xrightarrow[273K]{NaNO_2+HCl} B \xrightarrow[283]{H_2O} C$$

A. C_6H_5OH

B. $C_6H_5CH_2OH$

C. C_6H_5CHO

D. $C_6H_5NH_2$

Answer: A

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139. A compound with nitro group was reduced by Sn/HCl, followed by treatment with $NaNO_2/HCl$ and followed by phenol. The chromophore group in the final compound is

A. NO_2 group

B. NH_2 group

C. Azo group

D. OH group

Answer: C

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140. The reduction of which of the following compound would yield secondary amine?

A. Alyl nitrite

B. Carbylamine

C. Primary amine

D. Secondary nitro compound.

Answer: B

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141. 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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142. 

A. 

B. 

C. 

D. 

Answer: B

View Text Solution

143. Which of the following is not the property of ethanenitrile (CH_3CN) ?

A. Undergoes acidic hydrolysis to give carboxylic acid

B. Undergoes alkaline hydrolysis to give salt of carboxylic acid

C. It tautomerises to give methyl isocyanide

D. It gives carbylamine reaction with chloroform

Answer: D

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144. Amino group, $-NH_2$ is ortho, para-directing group in case of aromatic electrophilic substitution but nitration of aniline produce a good amount of m-nitroaniline. This is because

A. In nitration mixture, ortho, para-activity of NH_2 group is completely lost

B. $-NH_2$ becomes $-NH_3^+$, which is m-directing

C. $-NH_2$ becomes $-NH^+SO_4^-$ which is m-directing

D. $-NH_2$ becomes $NH^-NO_2^+$, which is m-directing.

Answer: B

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145. Aniline reacts with alktl halide to give

A. Amino compound

B. Tertiary compound

C. Quaternary ammonium compound

D. Azomethane

Answer: C

Watch Video Solution

146. When an organic compound was treated with sodium nitrite and hydrochloric acid in the ice cold, nitrogen gas was evolved vihorously. The compound is

A. A nitro compound

B. A primary compound

C. An aliphatic primary amine

D. An aromatic primary amine.

Answer: C

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147. Among the following compounds nitrobenzene, benzene, aniline and phenol, the strongest besic behaviour in acid mediu is exhibited by

A. Phenol

B. Aniline

C. Nitrobenzene

D. Benzene

Answer: B

Watch Video Solution

148. Which of the following compounds does not react with $NaNO_2$ and HCl?

A. C_6H_5OH

B. $C_6H_5NH_2$

C. $(CH_3)_3/CNO_2$

D. $(CH_3)_3CHNO_2$

Answer: C

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149. Aniline when treated with conc. HNO_3 gives

A. 

B. 

C. 

D. 

Answer: C

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150. Amines behave as:

A. Lewis acids

B. Lewis bases

C. Aprotic acids

D. Amphoteric compounds.

Answer: B

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151. Mixture of benzene and aniline can be separated by:

A. How water

B. Dil. HCl

C. Dil NaOH

D. Alcohol

Answer: B

Watch Video Solution

152. A nitrogen containing organic compound gave an oily liqid 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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153. Which of following species does not exert a resonance effect

A. C_6H_5OH

B. C_6H_5Cl

C. $C_6H_5NH_2$

D. $C_6H_5NH_3$

Answer: D

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154. The correct sequence of reactions to convert p-nitrophenol into quinol involves

A. Reduction, diazotization and hydrolysis

B. Hydrolysis, diazotization and reduction

C. Hydrolysis, reduction and diazotization

D. Diazotization, reduction and hydrolysis

Answer: A

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155. In an alkaline medium, glycine predominantly exists as/in a/an

A. Anion

B. Zwitter ion

C. Cation

D. Covalent form

Answer: A

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156. Benzylamine is a stronger base than aniline because

A. The lone pair of electrons on the nitrogen atom in benzylamine is delocalized

B. The lone pair of electrons on the nitrogen atom in aniline is delocalized

C. The ione pair of electrons on the nitrogen atom in aniline is not involved in resonance

D. Benzylamine has a higher molecular mass than aniline.

Answer: B

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157. p-Nitrobromobenzene can be converted to p-nitroaniline by using $NaNH_2$. The reaction proceeds throught he intermediate named

A. Carbocation

B. Carbanion

C. Benzyne

D. Dianion

Answer: C

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158. Which on doesn't liberate NH_3 when undergoes hydrolysis?

A. Acetanilide

B. Acetonitrile

C. Acetamide

D. Phenyl isocyanide

Answer: D

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159. The end product in the following sequence of reaction

A. 

B. 

C. 

D. 

Answer: C

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160. The structural feature which distinguishes proline from other natural α-amino acids is

A. It is a secondary amine

B. It is a primary amine

C. It is a tertiary amine

D. It exists as cyclic amide

Answer: A

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161. Identify the final product

A. 

B. 

C. 

D. 

Answer: D

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162. The product of the following reaction is 

A. 

B. 

C. 

D. 

Answer: B

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163. The final product in the following reaction sequence is

p - chloroaniline $\xrightarrow[0-5^{\circ}C]{NaNO_2, HCl}$ $\xrightarrow{KCN\ ?}$ $\xrightarrow{LiAlH_4\ ?}$

A. p-chloroaniline

B. p-chlorophenol

C. p-chlorobenzylamine

D. p-chlorobenzyl alcohol

Answer: C

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164. Pure aniline is a :

A. Colourless solid

B. Brown coloured solid

C. Colourless liquid

D. Brown coloured liquid

Answer: C

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165. During acetylation of amines, what is replaced by acetyl groups?

A. Hydrogen atom attached to nitrogen atom

B. One or more hydrogen atoms attached to carbon atom

C. One or more hydrogen atoms attached to nitrogen atom

D. Hydrogen atoms attached to either carbon atom or nitrogen atom.

Answer: C

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166. Which has apyramidal structure?

A. Trimethylamine

B. Methanol

C. Acetylene

D. Water

Answer: A

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167. Which one of the following compound is most basic 

A. A

B. B

C. C

D. All are equally basic

Answer: B

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168. Which of the following is capable of forming a zwitter ion ?

A. $C_6H_5 - OH$

B. $C_6H_4(NH_2)_2$

C. $\begin{matrix} CH_2OH \\ | \\ CH(2)OH \end{matrix}$

D. $H_2N - CH_2 - COOH$

Answer: D

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169. Nitration of aniline also gives m-nitro anilime, in stron acidic medium because,

A. In electrophilic substitution reaction amino group is meta directive

B. Inspite of substituents nitro group always goes to m-position

C. In strong acidic medium, nitration of aniline is a nucleophilic substitution reaction.

D. In strong acidic medim aniline present as anilinium ion

Answer: D

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170. Identify the product in the following sequence 3,4,5-tribromoaniline

$$\xrightarrow[(ii)\ H_3PO_2]{(i)\ \text{Diazotisation}} ?$$

A. 3,4,5-tribromobenzene

B. 1,2,3-tribromobenzene

C. 2,4,6-tribromobenzene

D. 3,4,5-tribromo nitro benzene

Answer: B

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171. Which of the following will be obtained on acetylation of aniline

A. Paracetanol

B. N-acetyl amino benzene

C. o-amino acetophenone

D. p-amino acetophenone

Answer: B

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172. Which of the following reaction does NOT occur ?

A. Tri propyl amine+ benzene sulphonyl chloride

B. Di propyl amine+benzene sulphonyl chloride

C. Propyl amine+benzene sulphonyl chloride

D. Propyl amine +p-toluene sulphonyl chloride

Answer: A

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173. Presently which reagent is used for separation of $1^{\circ}, 2^{\circ}$ and 3° amines

A. p-toluene sulphonyl chloride

B. Benzene sulphonyl chloride

C. p-Amino benzene sulphonyl chloride

D. m-toluene sulphonyl chloride

Answer: D

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174. Which of the following compounds is an amino acid

A. $CH_3 - CH_2 - \overset{O}{\overset{|}{C}} - O - NH_4$

B. $CH_3 - \underset{NH_2}{\underset{|}{CH}} - \overset{O}{\overset{||}{C}} - OH$

C. $CH_3 - CH_2 - \overset{\overset{O}{||}}{C} - NH_2$

D. $CH_3 - \underset{\underset{NH_2}{|}}{CH} - \overset{\overset{O}{||}}{C} - Cl$

Answer: B

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175. Rection of primary amines with aldehyde yields

A. Amides

B. Aldimines

C. Nitriles

D. Nitro compounds

Answer: B

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176. Assertion(A) : Aniline hydrogen sulphate on heating froms a mixture of o- and p-amineo- sulphonic acid .

Reason (R) : The suphonic acid is `overline e withdrawing .

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177. Assertion: Benzene diazonium chloride does not give tests for nitrogen.

Reason: N_2 gas lost during heating.

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178. Assertion: Amines are basic in nature.

Reason: Presence of ione pair of electron on nitrogenatom.

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179. (A) $p - O_2N - C_6H_4COCH_3$ is prepared by Friedel Crafts acylation of nitrobenzene.

(R) Nitrobenzene easily undergoes electrophilic substitution reaction.

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180. Assertion : Alkyl isocyanides in acidified water give alkyl formamides.

Reason : In isocyanides, carbon first act as a nucleophile and then as electrophile.

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181. Assertion : Anilinium choride is more acidic than ammonium chloride.

Reason : Anilinium ion is resonance-stabilised.

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182. (A) Amines are more basic than esters and ethers.

(R) Nitrogen is less electronegative than oxygen. It is better position to accommodate the positive charge on the proton.

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183. Assertion: Nitrobenzene is used as a solvent in Friedel-Craft's reaction.

Reason: Fusion of nitrobenzene with solid KOH gives a low yield of a mixture of o-and p-nitro phenols.

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

A. Anoxybenzene

B. Azobenzene

C. Aniline

D. p-Aminophenol

Answer: D

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185. The reaction

$$CH_3 - \underset{\underset{CH_3}{|}}{\overset{CH_3}{|}}{C} - ONa + CH_3CH_2Cl \rightarrow CH_3 - \underset{\underset{CH_3}{|}}{\overset{CH_3}{|}}{C} - O - CH_2 - CH_3$$

is called

A. Williamson continous etherification process

B. Etard reaction

C. Gatterman-Koch reaction

D. Williamson Synthesis.

Answer: D

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186. Consider the nitratio of benzene using mixed conc. H_2SO_4 and HNO_3. If a large amount of $KHSO_4$ is added to the mixture, the rate of nitration will be :

A. Faster

B. Slower

C. Unchanged

D. Doubled.

Answer: B

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187. The correct statement regarding the basicity of arylamines is .

A. Arylamines are generally less basic than alkylamines because the nitrogen lone-pair electrons are delocalized by interaction with the

aromatic ring π electron system

B. Arylamines are generally more basic than alkylamines because the nitrogen lone-pair electrons are not delocalized by interaction with the aromatic ring π electron system

C. Arylamines are generally more basic than alkylamines because of aryl group

D. Arylamines are generally more basic than alkylamines, because the nitrogen atom in arylamines is sp-hybridized.

Answer: A

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188. A given nitrogen-containing aromatic compound A reacts with Sn/HCl, followed by HNO_2 to give an unstable compound B . B on treatment with phenol,forms a beautiful coloured compound C with the molecular formula $C_{12}H_{10}N_2O$. The structure of compound A is

A. 

B. 

C. 

D. 

Answer: C

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189. Which one of the following nitro-compounds does not react with nitrous acid

A. 

B. 

C. 

D. 

Answer: D

View Text Solution

190. Identify A and predict the type of reaction

A. 

B. 

C. 

D. 

Answer: D

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191. Nitration of aniline in strong acidic medium also gives m-nitroaniline because

A. In splite of substituents nitro group always goes to only m-position

B. In electrophilic substitution reactions amino group is meta directive

C. In absence of substituents nitro group always goes to m-position

D. In acidic (strong) medium aniline is present as anilinium ion

Answer: D

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Properties Of Nitrogen Containing Compounds

1. Correct order of increasing basicity is

A. $NH_3 < C_6H_5NH_2(C_2H_5)_2NH < C_2H_5NH_2 < (C_2H_5)_3N$

B. $C_6H_5NH_2 < NH_3 < (C_2H_5) < (C_2H_5)_3N < (C_2H_5)_2NH < C_2H_5$

C. $C_6H_4NH_2 < NH_3 < C_2H_5NH_2 < (C_2H_5)_3N < (C_2H_5)_2NH$

D. $C_6H_5NH_2 < (C_2H_5)_3N < NH_3 < C_2H_5NH_2 < (C_2H_5)_2NH$

Answer: C

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

A. A diazonium salt

B. An alcohol

C. A nitrite

D. A dye

Answer: B

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3. In the chemical reaction

$CH_3CH_2NH_2 + CHCI_3 + 3KOH \rightarrow (A) + (B) + 3H_2O$ the compound $(A)$and (B) are respectively

A. C_2H_5CN and $3KCl$

B. $CH_3CH\ |_2\ CONH_2$ and $3KCl$

C. C_2H_5NC and K_2CO_3

D. C_2H_5NC and 3KCl

Answer: D

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4. In the reaction

$CH_3CN + 2H \xrightarrow[HCI]{SnCI_2} X \xrightarrow[H_2O]{\text{Boiling}} Y$ the term Y is .

A. Acetone

B. Ethyl amine

C. Acetaldehyde

D. Dimethyl amine.

Answer: C

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5. What is formed, when nitrobenzene is reduced using zinc and alkali?

A. Phenol

B. Aniline

C. Nitrosobenzene

D. Hydrazobenzene

Answer: D

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6. The correct order of reactivity towards the electrophilic substitution of the compounds anisole (I), benzene (II) and nitrobenzene (III) is :-

A. $I > II > III$

B. $III > II > I$

C. $II > III > I$

D. $I < II > III$

Answer: A

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7. The final product C, obtained in this reaction.

A. 

B. 

C. 

D. 

Answer: D

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8. Aniline in a set of reactions yielded a product D

The structure of product D would be

A. $C_6H_5CH_2NH_2$

B. $C_6H_5NHCH_2CH_3$

C. C_6H_5NHOH

D. $C_6H_5CH_2OH$

Answer: D

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9. Electrolytic reduction of nitrobenzene in weakly acidic medium gives .

A. Aniline

B. Nitrosobenzene

C. N-phenylhydoxylamine

D. p-hydroxylaniline

Answer: A

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10. Which of the following is more basic than aniline?

A. p-nitroaniline

B. Benzylamine

C. Diphenylamine

D. Triphenylamine

Answer: B

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11. Predict the product

A. 

B. 

C. 

D. 

Answer: A

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12. In a 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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13. Which of the following statements about primary amines is false ? .

A. Alkyl amines are stronger bases than ammonia

B. Alkyl amines are stronger baes than aryl amines

C. Alkyl amines react with nitrous acid to produce alcohols

D. Aryl amines react with nitrous acid to produce phenols

Answer: D

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14. Which of the following compounds is most basic

A. 

B. 

C. 

D. 

Answer: D

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15. What is the product obtained in the following reaction

A. 

B. 

C. 

D. 

Answer: B

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16. 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 caustiv potash gave (C) which on reduction gave isopropylmethylamine. Predict the structure of (A).

A. 

B. $CH_3CH_2 - NH - CH_3$

C. $CH_3 - \underset{\underset{CH_3}{|}}{N} - CH_3$

D. $CH_3CH_2CH_2 - NH_2$

Answer: A

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Tests For Nitrogen Containing Compounds

1. An orgainc compound A upon reacting with NH_3 gives B On heating B give C. C in presence KOH reacts with Br_2 to yield $CH_3CH_2NH_2A$ is .

A. $CH_3 - \underset{\underset{CH_3}{|}}{CH}COOH$

B. CH_3CH_2COOH

C. CH_3COOH

D. $CH_3CH_2CH_2COOH$

Answer: B

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

A. Hofmann bromide reaction

B. Hofmann mustard oil reaction

C. Carbylamine reaction

D. Perkin reaction

Answer: B

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3. The colours of p-amino azobenzene is

A. Orange

B. Congo red

C. Bismark brown

D. Indigo

Answer: A

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4. Which of the following substance does not give iodoform test

A. C_6H_5CN

B. RNH_2

C. CH_3OH

D. All

Answer: D

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5. Which of the following gas is used in warfare

A. N_2O

B. $CCl_3.NO_2$

C. CO_2

D. O_2

Answer: B

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

A. Schiff's test

B. Fehling's test

C. Tollen's test

D. Hinsberg test

Answer: D

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7. Diethyl oxalate is used for distinguishing primary, secondary and tertiary

A. Alcohols

B. Amines

C. Alkyl halides

D. Hydroggens in hydrocarbon

Answer: B

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8. A nauseating smell in the carbylamine test for primary aminesis due to the formation of

A. Isocyanide

B. Chloroform

C. Cyanide

D. DDT

Answer: A

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9. Carbylamine test is used in the detection of

A. Aliphatic 2° amine

B. Aromatic 1° amine

C. Aliphatic 1° amine

D. Both aliphatic and aromatic 1° amines

Answer: D

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10. Which one of the following compounds when heated with KOH and a primary amine gives carbylamines test ?

A. $CHCl_3$

B. CH_3Cl

C. CH_3OH

D. CH_3CN

Answer: A

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11. In organic compounds, nitrogen is tested in Lassaigne's test as

A. $NaNH_2$

B. $NaCN$

C. $NaNO_2$

D. $NaNO_3$

Answer: B

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Critical Thinking Objective Questions

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

A. $R - \overset{O}{\overset{|}{C}} - NH.CH_3$

B. $R - \overset{O}{\overset{|}{C}} - O.NH_4$

C. $R - \overset{O}{\overset{|}{C}} - NH_2$

D. $R - \overset{O}{\overset{|}{C}} - NHOH$

Answer: C

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2. Which of the following will be most stable diazonium salt $RN_2^+X^-$?

A. $CH_3CH_2N_2^+X^-$

B. $C_6H_5CH_2N_2^+X^-$

C. $CH_3N_2^+X^-$

D. $C_6H_5N_2^+X^-$

Answer: D

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3. The amine formed from an amide by means of bromine and alkali has

A. 1 carbon atom less than amide

B. 1 carbon atom more than amide

C. 1 hydrogen atom less than amide

D. 1 hydrogen atom more than amide

Answer: A

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4. If N and S both are present in an organic compound, during Lassaigne's test both changes to

A. Na_2S and NaCN

B. NaSCN

C. Na_2SO_3 and NaCN

D. Na_2S and $NaCNO$

Answer: B

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5. Ethanoic acid on heating with ammonia forms compound A which on treatment with bromine and sodium hydroxide gives compound B. Compound B on treatment wnh $NaNO_2$/dil HCl gives compound C. The compounds A. B and C respectively are :

A. Ethanamide, methanamine, methanol

B. Propanamide, ethanamine, ethanol

C. Propanamide,ethanamine,ethanol

D. N-ethylpropanamide,methaneisontrile,methanamine

Answer: A

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6. Which of the following is the most reactive towards ring nitration ?

A. Benzene sulphonic acid

B. Nitro benzene

C. Toluene

D. Chloro benzene

Answer: C

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7. Which of the following is soluble in sodium hydroxide

A. 

B. 

C. 

D. 

Answer: A

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8. The structural formula of Indigo dye is

A. 

B. 

C. 

D. 

Answer: C

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9. The following reaction is

A. Nucleophilic

B. Electrophilic substitution

C. Free radical substitution

D. None of these

Answer: A

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10. $C_5H_{13}N$ reacts with HNO_2 to give an optically active alcohol The compound is

A. Pentan-1-amine

B. Pentan-2-amine

C. N,N-dimethylpropan-2-amine

D. N-methylbutan-2-amine

Answer: B

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Jee Section Only One Choice Correct Answer

1. The compound which on rection with aqueous nirous acid at low temperature produces an oily nitrosamine, is

A. Methylamine

B. Ethylamine

C. Diethylamine

D. Triethylamine

Answer: C

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2. Acetamide is treated separately with the following reagents. Which one of these would give methyl amine ?

A. PCl_5

B. $NaOH + Br_2$

C. Sodalime

D. Hot conc. H_2SO_4

Answer: B

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3. Carbylamine test is performed in alc. KOH by heating a mixture.

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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4. Examine the following two structures for the anilinium 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. It is not an acceptable canonical structure because the nitrogen has 10 valence electrons.

D. II is an acceptable canonical structure.

Answer: C

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5. Allyl isocyanide has

A. 9 sigma bonds and 4 pi bonds

B. 8 sigma bonds and 5 pi bonds

C. 8 sigma bonds, 3 pi bonds and 4 non-bonding electrons

D. 9 sigma bonds, 3 pi bonds and 2 non-bonding electrons.

Answer: D

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6. Which of the following has the minimum heat of dissociation?

A. $(CH_3)_3N \rightarrow BF_3$

B. $(CH_3)_3N \rightarrow B(CH_3)F_2$

C. $(CH_3)_3N \rightarrow B(CH_3)_2F$

D. $(CH_3)_3N \rightarrow B(CH_3)_3$

Answer: B

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7. The most unlikely representation of resonance structuresof nitrophenoxide ion is

A. 

B. 

C. 

D. 

Answer: C

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8. The compound

forms nitroso amines when the substituents are

A. $R_1 = CH_3, R_2 = R_3 = H$

B. $R_1 = R_2 = H, R_3 = C_2H_5$

C. $R_1 = H, R_2 = R_1 = CH_3$

D. $R_1 = CH_3, R_2 = C_2H_5, R_3 = H$

Answer: C

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9. Among the following the strongest base is

A. $C_6H_5NH_2$

B. $p - NO_2C_6H_4NH_2$

C. $m - NO_2.C_6H_4NH_2$

D. $C_6H_5CH_2NH_2$

Answer: D

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10. RNH_2 reacts with $C_6H_5SO_2Cl$ in aqueous KOH to give a clear solution. On acidification a precepitate is obtained which is due to the formation of

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11. 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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12. Assertion: In strongly acidic solutions, aniline becomes more reactive towards electrophilic reagents.

Reason: the amino group being completely protonate din strongly acidic solution, the lone pair of electrons on the nitrogen is no longer available for resonance.

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13. 

A. 

B. 

C. 

D. 

Answer: A

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14. Benzamide on reaction with $POCl_3$ gives.

A. Aniline

B. Chlorobenzene

C. Benzyl amine

D. Benzonitrile

Answer: D

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

A. $CH_3 - C \equiv N$

B. $CH_3 - NH - CH_3$

C. $CH_3 - \overset{+}{N} \equiv \overset{-}{C}$

D. $CH_3\overset{+}{N} \equiv \overset{-}{C}$

Answer: D

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16. In the following reaction

 the structure of the major product 'X' is

A. 

B. 

C. 

D. 

Answer: B

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17. The major product of the following reaction is

A.

B.

C.

D.

Answer: A

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18. In the reaction

the structure of the Product T is

A.

B.

C.

D.

Answer: C

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19. The major product of the following reaction is

A. 

B. 

C. 

D. 

Answer: A

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20. A compound with molecular mass 180 is acylated with CH_3COCl to get a compound with molecular mass 390. the number of amino groups present per molecule of the former compound is

A. 2

B. 5

C. 4

D. 6

Answer: B

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21. On heating an aliphatic primary amine with chloroform and enthanolic potassium hydrozide, the organic compound formed is

A. An alkanol

B. An alkanediol

C. An alkyl Cyanide

D. An alkyl isocyanide

Answer: D

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22. Considerin the basic strength of amines in aqueous solution, which one has the smallest pK_b value?

A. $(CH_3)_2NH$

B. CH_3NH_2

C. $(CH_3)_3N$

D. $C_6H_5NH_2$

Answer: A

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23. In the reaction

 the product E is

A. 

B. 

C. 

D. 

Answer: C

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24. In the following reactions, the major product W is

A. 

B. 

C. 

D. 

Answer: A

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25. The major product of the reaction is

A. 

B. 

C. 

D. 

Answer: C

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26. In the hofmann-bromamide degradation reaction, the number of moles of NaOH and Br_2 used per mole of amine produced are

A. Four moles of NaOH and two moles of Br_2

B. Two moles of NaOH and two moles of Br_2

C. Four moles of NaOH and one moles of Br_2

D. One moles of NaOH and one moles of Br_2

Answer: C

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27. The product(s) of the following reaction sequence is (are)

A. 

B. 

C. 

D. 

Answer: B

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28. Which of the following compounds will form significant amount of meta product during mono-nitration reaction

A. 

B. 

C. 

D. 

Answer: B

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29. The order of basicity among the following compounds is

A. $II > I > IV > III$

B. $I > IV > III > II$

C. $IV > II > III > I$

D. $IV > I > II > III$

Answer: D

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30. The major product of the following reaction is

A. 

B. 

C. 

D. 

Answer: A

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31. Which of the following compounds will be suitable for kjeldahi's method for nitrogen estimation

A. 

B. 

C. 

D. 

Answer: A

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32. The increasing order of basicity of the following compounds is

A. (B) lt (A) lt (C) lt (D)

B. (B) lt (A) lt (D) lt (C)

C. (D) lt (B) lt (A) lt (C)

D. (A) lt (B) lt (C) lt (D)

Answer: B

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33. Which of the following statements is not correct

A. Replacement of halogen by NH_2 in alkyl halide is nucleophilic substitution reactions.

B. Aryl halides show more reactivity as compared to alkyl halides in the replacements of halogen by the NH_2 group

C. During the replacement of halogen by $-NH_2$ group. Ammonia is taken in large excess so as to avoid the formation of 2° and 3° amines.

D. Tertiary alkyl halide generally produces alkene instead of the replacement of halogen by NH_2 group.

Answer: B

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34. Which of the following statements is not correct

A. Primary amines show intermolecular hydrogen bonding

B. Secondary amines show intermolecular hydrogen bonding q

C. Tertiary amines show intermolecular hydrogen bonding

D. Amines have lower boiling points as compared to those of alcohols and carboxylic acids of comparable molar masses.

Answer: C

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35. Which of the following order is correct regarding the relative basicity of amines

A. 

B. 

C. 

D. 

Answer: A

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36. Which of the following amines from $N-$ nitroso derivative when treated with $NaNO_2$ and HCI?

A. CH_3NH_2

B. 

C. 

D. 

Answer: C

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37. Hinsberg's reagent is:

A. Phenylisocyanide

B. Benzenesulphonyl chloride

C. p-toluenesulphonic acid

D. o-dichlorobenzene

Answer: B

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38. On warming an aqueous solution of benzenediazonium chloride, the product obtained is

A. Benzene sulphonic acid

B. Aniline

C. Pehnol

D. Amide

Answer: C

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39. Which of the following reagent can convert benzenediazonium chloride into benzene

A. Water

B. Acid

C. Hypophosphorous

D. HCl

Answer: C

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40. Hofmann's method to separate amines in a mixture uses the reagent:-

A. Benzenesulphonyl chloride

B. Diethyl oxalate

C. Benzeneisocyanide

D. p-toluenesulphonic acid

Answer: B

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41. Which of the following compounds will dissolve in an alkali solution after it has undergone reaction with Hinsberg reagent?

A. $(C_2H_5)_2NH$

B. $CH_3 - \underset{\underset{CH_3}{|}}{N} - C_6H_5$

C. CH_3NH_2

D. $C_6H_5NHC_6H_5$

Answer: C

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42. 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 electron density on meta-carbon is more than that on ortho and para-positions

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

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

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

Answer: A::D

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43. p-chloro aniline and anilinium hydrochloride can be distinguished by

A. Sandmeyer reaction

B. $NaHCO_3$

C. $AgNO_3$

D. Carbyl amine test

Answer: B::C

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44. A positive carbylmine test is given by

A. N,N-dimethyl aniline

B. 2,4-dimethyl aniline

C. N-methyl-o-methyl aniline

D. p-methyl benzylamine

Answer: B::D

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45. Which of the following reactions give $RCONH_2$

A. $R-C\equiv N+H_2O \xrightarrow{HCl}$

B. $RCOONH_4 \xrightarrow{\text{heat}}$

C. $R-COCl+NH_3 \rightarrow$

D. $(RCO)_2O+NH_3 \rightarrow$

Answer: B::C

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46. In the reaction

$$2x + B_2H_6 \rightarrow \left[BH_2(x)_2\right]^+ [BH_4]^-$$

The reagents (s) $'x'$ is (are):

A. NH_3

B. CH_3NH_2

C. $(CH_3)_2NH$

D. $(CH_3)_3N$

Answer: A::B::C

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47. In the reaction shown below, the major product(s) formed is/are

A. 

B. 

C. 

D. 

Answer: A

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48. Which of the following statement is true regarding reaction of p-aminophenol with arenediazonium chloride.

A. Reaction takes place at position 2 in presence of HCl

B. Reaction takes place at position 3 in presence of NaOH

C. Only two positions (2 and 6) can be coupled in presence of OH^-

D. Four are groups can be introduced in the molecule

Answer: A::B::D

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49. Which of the following reacts with nitrous acid

A. Acetamide

B. 2-Nitrobutane

C. 2-methyl-2-nitropropane

D. Diethylamine

Answer: A::B::D

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50. p-Nitroaniline can be obtained by

A. 

B. 

C. 

D. 

Answer: C::D

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51. Nitrobenzene can be converted into azobenzene by reduction with

A. $Zn / NaOH - CH_3OH$

B. $Zn / NH_4Cl(aq), \Delta$

C. $LiAIH_4 / \text{ether}$

D. $H_2 / \text{Raney Ni}$

Answer: A::C

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52. The compound (X) with M.F. $C_4H_{11}N$ on treatment with HNO_2 gives a tertiary alcohol with M.F. $C_4H_{10}O$. The compound (X) will give

A. Carbylamine reaction

B. Hofmann mustard oil reaction

C. Diazonium salt as intermediate with HNO_2

D. Gives 2-methyl-2-nitropropane on oxidation with $KMnO_4$

Answer: A::B::D

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53. Which of the following pairs show coupling reaction

A. 

B. 

C. 

D. Diazotised sulphanilic acid+Dimethyl aniline

Answer: B::C::D

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Reasoning Type Question

1. Statement I: Aniline on reaction with $NaNO_2HCl$ at $0^\circ C$ followed by coupling with β-naphthol gives a dark blue coloured precipitate.

Statement II: The colour of the compound formed in the reaction of aniline with $NaNO_2 / HCl$ at $0^\circ C$ followed by coupling with β-naphthol is due to extended conjugation.

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2. Statement 1: Benzyl amine on reaction with $NaNO_2 / HCl$ followed by β-Naphthol in slight basic medium forms a coloured dye.

Statement 2: Stable diazonium salts can form coloured dye with highly activated aromatic compounds

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3. Statement 1: Arenediazonium salts are stable at freezing temperatures.

Statement 2: Due to resonance between π bond of Benzene $-\overset{\oplus}{N} \equiv N$ stability is attained.

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Comprehension Type Questions

1. p-Amino-N,N-dimethylaniline is added to a strongly acidic solution of X. The resulting solution is treated with a few drops of aqueous solution of Y to yield blue colouration due to the formation of methylene blue. Treatment of aqueous solution of Y with reagent potassium hexacyanoferrate (II) leads to the formation of an intense blue precipitate. The precipitate dissolves on excess addition of the reagent. Similarly, the treatment of the solution of Y with the solution of potassium hexacyanoferrate (III) leads to a brown colouration due to the formation of Z.

Q. Compound X is

A. $NaNO_3$

B. $NaCl$

C. Na_2SO_4

D. Na_2S

Answer: D

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2. p-Amino-N,N-dimethylaniline is added to a strongly acidic solution of X. The resulting solution is treated with a few drops of aqueous solution of Y to yield blue colouration due to the formation of methylene blue. Treatment of aqueous solution of Y with reagent potassium hexacyanoferrate (II) leads to the formation of an intense blue precipitate. The precipitate dissolves on excess addition of the reagent. Similarly, the treatment of the solution of Y with the solution of potassium hexacyanoferrate (III) leads to a brown colouration due to the

formation of Z.

Q. Compound Y is

A. $MgCl_2$

B. $FeCl_2$

C. $FeCl_3$

D. $ZnCl_2$

Answer: C

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3. p-Amino-N,N-dimethylaniline is added to a strongly acidic solution of X. The resulting solution is treated with a few drops of aqueous solution of Y to yield blue colouration due to the formation of methylene blue. Treatment of aqueous solution of Y with reagent potassium hexacyanoferrate (II) leads to the formation of an intense blue precipitate. The precipitate dissolves on excess addition of the reagent. Similarly, the treatment of the solution of Y with the solution of

potassium hexacyanoferrate (III) leads to a brown colouration due to the formation of Z.

Q. Compound Z is

A. $Mg_2\left[Fe(CN)_6\right]$

B. $Fe\left[Fe(CN)_6\right]$

C. $Fe_4\left[Fe(CN)_6\right]_3$

D. $K_2Zn_3\left[Fe(CN)_6\right]_2$

Answer: B

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4. In Hoffmann bromamide reaction, conversion of a carboxylic acid amide into an amine with a loss of a carbon atom on treatment with aqueous sodium hypobromite takes place. Thus in Hoffmann reaction shortening of a carbon chain takes place.

$$R-\overset{\overset{O}{||}}{C}-NH_2 \xrightarrow[NaOH]{Br_2} R-NH_2+NaBr+Na_2CO_3$$

Mechanism of the reaction is:

Which of the following will n ot give Hoffmann bromamide reaction

A. $CH_3 - \overset{O}{\overset{||}{C}} - NH_2$

B. 

C. 

D. 

Answer: D

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5. In Hoffmann bromamide reaction, conversion of a carboxylic acid amide into an amine with a loss of a carbon atom on treatment with aqueous sodium hypobromite takes place. Thus in Hoffmann reaction shortening of a carbon chain takes place.

$$R - \overset{O}{\overset{||}{C}} - NH_2 \xrightarrow[NaOH]{Br_2} R - NH_2 + NaBr + Na_2CO_3$$

Mechanism of the reaction is:

 Product (A) is

A. 

B. 

C. 

D. None

Answer: A

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6. In Hoffmann bromamide reaction, conversion of a carboxylic acid amide into an amine with a loss of a carbon atom on treatment with aqueous sodium hypobromite takes place. Thus in Hoffmann reaction shortening of a carbon chain takes place.

$$R-\overset{\overset{O}{||}}{C}-NH_2 \xrightarrow[NaOH]{Br_2} R-NH_2+NaBr+Na_2CO_3$$

Mechanism of the reaction is:

Number of moles of NaOH consumed in above reaction

A. 1

B. 2

C. 3

D. 4

Answer: D

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7. In Hoffmann bromamide reaction, conversion of a carboxylic acid amide into an amine with a loss of a carbon atom on treatment with aqueous sodium hypobromite takes place. Thus in Hoffmann reaction shortening of a carbon chain takes place.

$$R-\overset{\overset{O}{||}}{C}-NH_2 \xrightarrow[NaOH]{Br_2} R-NH_2+NaBr+Na_2CO_3$$

Mechanism of the reaction is:

 Product (A) is

A. $Ph - NH_2$

B. $Ph - CH_2 - NH_2$

C. $Ph - NH - CH_3$

D. 

Answer: A

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Integer Type Questions

1. How many of the following amines will undergo diazotisation tert-Butylamine, ethanamine, aniline, N-methylaniline,p-toluidine,m-chloroaniline,2-phenylethanamine,o-anisidine,2,4,6-tribromoaniline

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2. Total number of nitrogen atoms presentin reduced product obtained by reducing nitrobenzene with $LiAlH_4$ followed by aqueous work up is

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3. Amongest the following the total number of compounds solution in aqueous NaOH is

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4. Match each of the compounds in Column I with its characteristic reaction(s) in Column II.

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5. Match the four starting materials (A,B,C,D) given in Column I with the corresponding reaction schemes (I,II,III,IV) provided in Column II and select the correct answer.

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6. Match the entries listed in Column I with appropriate entries listed in Column II.

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Jee Advanced 2018 More Than One Choice Correct Answer

1. Aniline reacts with mixed acid (conc. HNO_3 and conc. H_2SO_4) at 288K to give $P(51\,\%), Q(47\,\%)$ and R (2%). The major product(s) of the

following reaction sequence is (are)

A. 

B. 

C. 

D. 

Answer: D

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