



# CHEMISTRY

# **BOOKS - DISHA PUBLICATION CHEMISTRY (HINGLISH)**

# AMINES

Jee Main 5 Years At A Glance

1. Product A and B formed in the following reactions are reactively,



Answer: A

2. The increasing order of nitration of the following compounds is :

A. 
$$(A)<(B)<(D)<(C)$$

$$\mathsf{B.}\,(A) < (B) < (C) < (D)$$

$${\sf C}.\,(B)<(A)<(C)<(D)$$

$${\tt D}.\,(B)<(A)<(D)<(C)$$

#### Answer: A

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**3.** Which of the following compounds will give significant amount of meta-product during mononitration reaction?

В. 📄	
C. 📄	
D. 📄	

# Answer: C

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4. The test to distinguish primary, secondary and tertiary amine is

A. Sandmeyer's reaction

B. Carbylamine reaction

C. Mustard oil test

 $\mathsf{D.}\, C_6H_5SO_2Cl$ 

Answer: D

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5. Fluorination of an aromatic ring is easily accompolished by treating a diazonium salt with  $HBF_4$ . Which of the following conditions is correct about this reaction ?

A. NaF/Cu

B.  $Cu_2O/H_2O$ 

C. Only heat

D.  $NaNO_2/Cu$ 

Answer: C

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6. The "N" which does not contribute to the basicity for the compound is :

A. N9

B. N3

C. N1

D. N7

Answer: A

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7. In the hoffmann-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 mole of  $Br_2$ .

C. Four mole of NaOH and one mole of  $Br_2$ .

D. one moles of NaOH and one moles of  $Br_2$ .

Answer: C

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8. Arrange the following amines in the order of increasing basicity :-

A. 🛃
В. 📄
C. 🔀
D. 🛃
Answer: C
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9. In the reaction
the product E is :
A. 🛃
В. 🛃
C. 🚬



### Answer: A



**10.** Complete reduction of benzene-diazonium chloride with Zn/HCl gives :

A. Aniline

B. Phenylhydrazine

C. Azobenzene

D. Hydrazobenzene

#### Answer: A



11. The final product formed when methylamine is treated with  $NaNO_2$ and HCl followed by hydrolysis is :

A. Diazomethane

B. Methylalcohol

C. Methylcyanide

D. Nitromethane

Answer: B

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12. In a set of reactions p - nitrotoluene yielded a product E.

The product E would be :

A. 📄

в. 📄

С. 📄		
D. 📄		
Answer: B		
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13. Considering the basic strength of amines in aqueous solution, which

one has the smallest  $pK_b$  value?

A.  $(CH_3)_2 NH$ 

 $\mathsf{B.}\,CH_3NH_2$ 

 $\mathsf{C}.\,(CH_3)_3N$ 

 $\mathsf{D.}\, C_6H_5NH_2$ 

Answer: A

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Exercise 1 Concept Builder Topicwise Topic 1 Amines And Amides

**1.** Which of the following arylamines will not form a diazonium salt on reaction with sodium nitrite in hydrochloric acid?

A.m - Ethylaniline

B. p - Aminoacetophenone

C. 4 - Chloro - 2 - nitroaniline

D. N - Ethyl - 2 - methylaniline

## Answer: D

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Product (B) in this reaction is :



В. 📄	
C. 📄	
D. 📄	

Answer: B

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**3.** Which is the correct decreasing order of basic strength in aqueous medium

A.  $(CH_3)_3N$ ,  $(CH_3)_2NH$ ,  $CH_3NH_2$  (in aprotic solvent)

 $\mathsf{B}. C_2 H_5 N H_2, (C_2 H_5)_2 N H, (C_2 H_5)_3 N \quad (\text{in a protic solvent})$ 

 $C. CH_3NH_2, (CH_3)_2NH, (CH_3)_3N$  (in protic solvent)

D.  $C_2H_5NH_2$ ,  $(C_2H_5)_2NH$ ,  $(C_2H_5)_3N$  (in protic solvent)

#### Answer: A

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

A. Zn/HCl

B.  $Zn/NH_4Cl$ 

 $\mathsf{C.}\,Zn\,/\,NaOH$ 

D. Zn/HCl

Answer: B

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**5.** Conversion of benzene diazonium chloride to chloro benzene is an example of which of the following reactions ?

A. Claisen

B. Friedel - craft

C. Sandmeyer

D. Wurtz

Answer: C

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6. Which of the following reagents will be useful to distinguish between

A. Dilute HCl

B.  $C_6H_5SO_2Cl$  and  $OH^-/H_2O$ 

C. HONO then  $\beta$  – naphthol

D.  $AgNO_3$  in  $H_2O$ 

#### Answer: C

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7. 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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8. Which of the following statement is not correct

A. Methylamine is more basic than  $NH_3$ .

B. Amines form hydrogen bonds.

C. Ethylamine has higher boiling point than propane.

D. Dimethylamine is less basic than methylamine.

## Answer: D



#### Answer: B



10. Which of the following statement is false

A. Dimethylamine as well as trimethyl amine are solunle in water.

B. Trimethylamine forms hydrogen bond neither with itself nor with

water.

C. Trimethylamine can acts as hydrogen bond acceptor only, while

dimethylamine can serve as both a hydrogen bond donor and

acceptor.

D. All the three statements are false.

#### Answer: B

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**11.** Which of the following reagents will convert p - methylbenzenediazonium chloride into p - cresol?

A. Cu powder

 $\mathsf{B}.\,H_2O$ 

 $\mathsf{C}.\,H_3PO_2$ 

# $\mathsf{D.}\, C_6H_5OH$

#### Answer: B



12. Benzamide on reaction with  $POCl_3$  gives.

A. aniline

B. chlorobenzene

C. benzylamine

D. benzonitrile

#### Answer: D



 $\textbf{13.} R - NH_2 + CH_3 COCl \xrightarrow{(\text{excess})} A.$ 

The product (A) will be -

# A. $RNHCOCH_3$

- B.  $RN(COCH_3)_2$
- C.  $\stackrel{+}{RN}(COCH_3)_3Cl^-$
- $D.R CONH_3$

#### Answer: A

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14. Aniline is separated from a mixture by :

A. fractional crystallisation

B. fractional distillation

C. vacuum distillation

D. steam distillation

# Answer: D



# **15.** How many primary amines are possible for the formula $C_4 H_{11} N$

A. 1

B. 3

C. 4

D. 2

#### Answer: C



16. The conversion of acetophenone to acetanilide is best accompanied by

using :

- A. Beckmann rearrangement
- B. Curtius rearrangement
- C. Lossen rearrangement
- D. Hofmann rearrangement

#### Answer: A

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17. Azo dye is prepared by the coupling of phenol and:

A. diazonium chloride

B. o - nitroaniline

C. benzoic acid

D. chlorobenzene



19. Among the following the strongest base is

A.  $C_6H_5NH_2$ 

 $\mathsf{B.}\,p-NO_2C_4NH_2$ 

 $\mathsf{C}.\,m-NO_2C_6H_4NH_2$ 

 $\mathsf{D.}\, C_6H_5CH_2NH_2$ 

#### Answer: D

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**20.**  $C_7H_9N$  has how many isomeric forms that contain a benzene ring?

A. 4

B. 5

C. 6

D. 7

Answer: B

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21. Treatment of ammonia with excess of ethyl iodide will yield

A. diethylamine

B. ethylamine

C. triethylamine

D. tetraethylammonium iodide

## Answer: D

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

A.  $CH_3CH_2NO_2$ 

 $\mathsf{B.}\,CH_3CH_2-O-N=O$ 

 $\mathsf{C.}\, C_6H_5N=NC_6H_5$ 

D.  $CH_3CH_2NC$ 

# Answer: A



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

A.  $CH_3CONH_2 \xrightarrow{Br_2/KOH}$ 

- $\text{B.} CH_3Cn \xrightarrow{LiAlH_4}$
- $\mathsf{C.}\,CH_3NC \xrightarrow{LiAlH_4}$
- $\mathsf{D.}\,CH_3CONH_2 \xrightarrow{LiAlH_4}$

Answer: C

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

A.  $CH_3NH_2$ 

 $\mathsf{B.}\, C_2H_5NH_2$ 

 $C. (CH_3)_3 N$ 

D.  $(CH_2)_3 N$ 

Answer: C

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25. The correct order of increasing basicity in aqueous solution is

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

B.  $C_6H_5NH_2 < NH_3 < (C_2H_5)_3N < C_2H_5NH_2 < (C_2H_5)_2NH_2$ 

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

D. None of the above

#### Answer: B

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**26.**  $CH_3CH_2Cl \xrightarrow{NaCN} X \xrightarrow{Ni/H_2} Y \xrightarrow{Acetic}_{anhydride} Z$ 

 $\boldsymbol{Z}$  in the above reaction sequence is .

A.  $CH_3CH_2CH_2NHCOCH_3$ 

 $\mathsf{B.}\, CH_3 CH_2 CH_2 NH_2$ 

 $\mathsf{C.}\,CH_3CH_2CH_2CONHCH_3$ 

D.  $CH_3CH_2CH_2CONHCOCH_3$ 

Answer: A

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

A. supress the concentration of free aniline available for coupling.

B. supress hydrolysis of phenol.

C. ensure a stoichiometric amount of nitrous acid.

D. neutralise the base liberated.

# Answer: A



29. Primary amines on heating with  $\mathrm{CS}_2$  followed by excess of mercuric chloride yields isothiocyanate. The reaction is called

A. Hofmann mustard oil reaction

**B.** Perkin reaction

C. Fries reaction

D. Diels - Alder reaction

# Answer: A

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30. When benzene diazonium chloride is treated with cuprous chloride in

HCI. Chlorobenzene is formed . This reaction is called :

A. Gattermann reaction

B. Perkin reaction

C. Etard reaction

D. Sandmeyer reaction

#### Answer: D



**31.** 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. phenophthalein

Answer: B

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**32.** In a reaction of aniline a coloured product C was obtained.



The structure of C would be :



#### Answer: D

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33. 戻

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



C. 📄

 $\mathsf{D.}\, CH_2=CH_2$ 

Answer: D

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34. Predict about the relative boiling point of the following two amines.

A. Boiling point of I > II.

- B. Boiling point of II > I.
- C. Both should have equal boiling points.

D. It can't be predicted.

Answer: B

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35. Identify Z in the following sequence of reactions -

$$CH_3COONH_4 \stackrel{\Delta}{\longrightarrow} X \stackrel{P_2O_5}{\longrightarrow} Y \stackrel{H_2 rac{\emptyset}{H}}{\longrightarrow} Z$$

A.  $CH_3 - CH_2 - CO - NH_2$ 

B.  $CH_3 - CN$ 

 $C.(CH_3CO)_2$ 

 $D. CH_3 - COOH$ 

#### Answer: D

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36. Which of the following will produce isopropyl amine -

$$\begin{array}{l} \text{(I)} (CH_3)_2 CO \xrightarrow{NH_2 OH} X \xrightarrow{LiAlH_4} \\ \text{(II)} CH_3 - CH_2 - CHO \xrightarrow{NH_3} X \xrightarrow{LiAlH_4} \\ \text{(III)} (CH_3)_2 CH - OH + PCl_5 \rightarrow X \xrightarrow{NH_3} \\ \text{(IV)} CH_3 - CH_2 - CH_2 - NH_2 \xrightarrow{\text{heat}} \end{array}$$

B. II, III

C. I, III

D. IV only

Answer: C

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37. In the following sequence of reactions, the compound C formed would

be

$$CH_3 - \operatorname{CH}_{ert} - CH_3 \stackrel{HNO_2}{\longrightarrow} A \stackrel{[O]}{\longrightarrow} B \stackrel{CH_3MgI}{\stackrel{H^+/H_2O}{\longrightarrow}} C$$

A. 1, 1 - Dimethylethanol

B. Butanol - 1

C. Butanol - 2

D. 2 - Methyl - propanol - 1

Answer: A



**38.** Among the following isomeric  $C_4H_{11}N$  amines, one having the lowest boiling point



**39.** Which of the following does not give N - ethyl cyclopentylamine as major product?

A. 
$$NH_2 + CH_3CHO \xrightarrow{H_2/Pt}$$



#### Answer: C



40. Which of the following compounds is an enamine?



#### Answer: C

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**41.** Which of the following reaction will not given N, N - dimethyl benzamide?



#### Answer: B

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**42.** A compound 'Z' reacts with three moles of  $CH_3I$  and gives a product which on hydrolysis gives  $\left[(CH_3)_4N\right]^+OH^-$ . Compound 'Z' is

A.  $CH_3NH_2$ 

 $\mathsf{B.}\,(CH_3)_2NH$ 

 $\mathsf{C}.\,(CH_3)_3N$
D. 
$$(CH_3)_4 \overset{+}{N}Cl^-$$

Answer: A



43. The cyclobutyl methylamine with nitrous acid gives



D. All of these

Answer: D



**44.** The correct order of decreasing basic character of the three aliphatic primary amines is

A. I > II > III

 ${\rm B.}\,III>II>I$ 

 $\mathrm{C.}\,I > II \approx III$ 

 $\mathsf{D}.\,I=II\equiv III$ 

## Answer: A

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**45.** Predict the possible number of alkenes and the main alkene in the following reaction.

A. 📄

в. 📄

- C.3 and  $H_2C = CH_2$
- D.2 and  $H_2C = CH_2$

#### Answer: C

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

A. Hoffmann Bromamide reaction

B. Stephens reaction

C. Gabriels phthalimide synthesis

D. Carbylamine reaction

## Answer: A

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## Exercise 1 Concept Builder Topicwise Topic 2 Cyanides And Isocyanides

**1.** Reaction of ethyl amine with alkaline chloroform leads to the formation of carbylamine reaction. This reaction involves the attack of an electrophile on ethyl amine, the electrophile is A.  $H_3O^+$ 

 $\mathsf{B.}\,H^{\,+}$ 

 $\mathsf{C}.RNH_3^+$ 

 $D.: CCl_2$ 

Answer: D

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2. Ethyl isocyanide on hydrolysis in acidic medium generates:

A. propanoic acid and ammonium salt.

B. ethanoic acid and ammonium salt.

C. methylamine and ethanoic acid.

D. ethylamine and methanoic acid.

### Answer: D

3. Methyl cyanide is less basic than methylamine because

A. there is a triple bond between carbon and nitrogen atoms.

B. molecular weight is higher than methylamine.

C. the lone pair of electrons in nitriles belongs to sp - orbital and lone

pair of electrons in amines belongs to  $sp^3-\,$  orbital.

D. None of these

#### Answer: C

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**4.** In the reaction,  $R-C\equiv N+4(H)\stackrel{X}{\longrightarrow}RCH_2NH_2$  X can be

A.  $LiAlH_4$ 

 $\mathsf{B}.\,H_2SO_4$ 

 $\mathsf{C}.\,Ni$ 

D. 2KBr

Answer: A

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5. Hydrolysis of phenyl isocyanide forms :

A. Benzoic acid

B. Formic acid

C. Acetic acid

D. None of these

Answer: B

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

A. Position

**B.** Functional

C. Dextroisomerism

D. Position isomerism

## Answer: B

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7. Butanenitrile may be prepared by heating

A. propyl alcohol with  $K\!CN$ 

B. butyl alcohol with  $K\!CN$ 

C. butyl chloride with  $K\!CN$ 

D. propyl chloride with KCN

## Answer: D



9. In the reaction 📄 the products obtained are

A.	
B.	

C. 📄

D. None of these

Answer: A

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Exercise 1 Concept Builder Topicwise Topic 3 Concept Applicator

**1.** Secondary nitro compounds when react with  $HNO_2$  forms crystalline solids which one on treatment with NaOH gives

A.  $CH_3CH_2NO_2$ 

B.  $CH_3 - \operatorname*{CH}_{H_3} - CH_2 NO_2$  $ert_{CH_3}^{ert}$ C.  $(CH_3)_2 CHNO_2$ 

# D. $(CH_3)_3 CNO_2$

## Answer: C



2. Acetanilide on nitration followed by alkaline hydrolysis mainly gives -

A. o - Nitroaniline

B. p - Nitroaniline

C. m - Nitroaniline

D. 2, 4, 6 - Trinitroaniline

#### Answer: B



## 3. In the reaction :

A. SiC

 $\mathsf{B}.\,H_2SO_4$ 

 $\mathsf{C}.KMnO_4$ 

D.  $NH_4HS$ 

Answer: D

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4. Which of the following will be easily nitrated?

A. 📄

В. 📄

 $\mathsf{C.}\,CH_3NO_2$ 

 $\mathsf{D.}\, C_6H_5NO_2$ 

Answer: A	
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5. When notrobenzene is heated with fuming nitric acid in the presence	
of fuming sulphuric acid for many hours the end product formed is	
A. 📄	
В. 戻	

Answer: A

С. 📄

D. 📄



6. In the series of reaction

 $C_{6}H_{5}NH_{2} \xrightarrow[0-5^{\circ}C]{HCl} X \xrightarrow[H_{2}O]{HNO_{2}} Y + N_{2} + HCl$ ,

X and Y are respectively

A.  $C_6H_5-N=N-C_6H_5, C_6H_5N_2^+Cl^-$ 

B.  $C_6H_5N_2^+Cl^-, C_6H_5-N=N-C_6H_5$ 

C.  $C_{6}H_{5}N_{2}^{+}Cl^{-}, C_{6}H_{5}NO_{2}$ 

D.  $C_6H_5NO_2, C_6H_6$ 

#### Answer: C

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**7.** The consituent of the powerful explosive RDX is formed during the nitration of

A. toluene

B. phenol

C. glycerol

D. urotropine

## Answer: D



#### Answer: D

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9. Nitrobenzene on electrolytic reduction is strongly acidic medium gives

A. aniline

B. p - aminophenol

C. m - nitroaniline

D. nitrosobenzene

#### Answer: B

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10. Hydrolysis of  $CH_3CH_2NO_2$  with 85%  $H_2SO_4$  gives :

## A. $CH_3CH_2OH$

 $\mathsf{B.}\, C_2 H_6$ 

 $\mathsf{C}.\,CH_3CH=NOH$ 

D.  $CH_3COOH$ 

Answer: D

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11. 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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12. Which of the following reactions is not feasible?

A. 
$$ICH_2COOC_2H_5 + AgNO_2 \xrightarrow[ether]{0^{\circ}C} O_2NCH_2COOC_2H_5 + AgI$$
  
B.  $(CH_3)_3CNH_2 \xrightarrow[Actone + water]{KMnO_4} (CH_3)_3C - NO_2$ 

C. 📄

D. All the above are feasible

## Answer: C



13. Dyamite is a mixture of :

A. Nitroglycerine + Saw dust.

B. Nitroglycerine + HCl.

C. Hydrogen bomb  $+H_2SO_4$ 

D. Glycerine  $+H_2SO_4$ .

Answer: A

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Exercise 2 Concept Applicator

# 1. The major product of the reaction



2. Arrange the following compounds in order of increasing basic strength.

```
(weakest \rightarrow strongest)
```

A. 4 < 2 < 1 < 3

B. 4 < 3 < 1 < 2

 ${\rm C.}\,4 < 1 < 3 < 2$ 

D. 2 < 1 < 3 < 4

Answer: B



3. Identify product C in the following reaction sequence :

$$CH_{3} \overset{(CH_{3})}{\underset{CH_{3}}{\vdash}} - CH_{2}CH_{2}OH \xrightarrow{K_{2}Cr_{2}O_{2}:H(2)SO_{4}}{H_{2}O, \text{ heat}} A \xrightarrow{SOCl_{2}} B \xrightarrow{(CH_{3})_{2}NH}{(2 \text{ mol})} C \xrightarrow{\operatorname{dicthyl ether}}{2. H_{2}O} \overset{(CH_{3})_{2}NH}{\underset{CH_{3}}{\overset{(2 \text{ mol})}} C \xrightarrow{(2 \text{ mol})}{2. H_{2}O} A \xrightarrow{CH_{3}} B \xrightarrow{(CH_{3})_{2}NH}{(2 \text{ mol})} C \xrightarrow{(2 \text{ mol})}{2. H_{2}O} A \xrightarrow{(2 \text{ mo$$

$$CH_3$$
  
 $|$   
D.  $CH_3CCH_2CHN(CH_3)_2$   
 $|$   $|$   $CH_3$  OH

Answer: B

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**4.** Among the following compounds, the increasing order of their basic strength is :

A. 
$$(I) < (II) < (IV) < (III)$$

 $\mathsf{B.}\left(I\right)<\left(II\right)<\left(III\right)<\left(IV\right)$ 

 ${\sf C.}\,(II) < (I) < (IV) < (III)$ 

$$\mathsf{D}.\,(II) < (I) < (III) < (IV)$$

## Answer: C

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6. The product -(C) obtained in the following sequence of reactions is



A. 📄

С. 📄

D. None of these

Answer: C

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7. A compound A has a molecules formula  $C_7H_7NO$ . On tratement with  $Br_2$  and  $KOH_4$ , A gives amine B which gives, carbylamine test. B upon diazotisation and coupling with give an azo dye. A can be

A.  $C_6H_5CONHCOCH_3$ 

 $\mathsf{B.}\, C_6H_5CONH_2$ 

 $\mathsf{C.}\, C_6H_5CONH_2$ 

 $\mathsf{D}. o-, m- ext{ or } p-C_6H_4(NH_2)CHO$ 

Answer: B

## 8.3,5 - Dibromotoluene can be best synthesised by



### Answer: A



9. Which of the following is the strongest base?



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10. The relative order of basic character of the following compounds is

A. II > I > III > IV > V

 $\mathsf{B}.\,II > III > IV > V > I$ 

 $\mathsf{C}.\,II > V > IV > I > II$ 

 $\mathsf{D}.\,II > IV > V > III > I$ 

#### Answer: C

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**11.** Which of the following can undergo electrophilic substitution when treated with nitrous acid at  $0^{\circ}C$ ?

A.  $C_6H_5NH_2$ 

 $\mathsf{B.}\, C_6H_5NHCH_3$ 

 $\mathsf{C.}\, C_6H_5N(CH_3)_2$ 

D. None

Answer: C

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12. When aniline reacts with oil of bitter almonds  $(C_6H_5CHO)$  condensation takes place and benzal derivative is formed This in knkown as .

A. Million's base

B. Schiff's reagent

C. Schiff's base

D. Benedict's reagent

### Answer: C

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**13.** Aniline is an activated system for electrophilic substitution The compounds formed on heating aniline with acetic anhydride is .



### Answer: D

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<b>14.</b> The final product C, obtained in this reaction
would be
A. 📄
В. 📄
C. 📄
D. 📄
Answer: D
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**15.** Aniline in a set of reaction yielded a product D.

The strucutre of the product D would be :

A.  $C_6H_5NHOH$ 

 $\mathsf{B.}\, C_6H_5NHCH_2CH_2$ 

 $\mathsf{C.}\, C_6H_5CH_2NH_2$ 

 $\mathsf{D.}\, C_6H_5CH_2OH$ 

Answer: D

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**16.** The major organic product formed from the following reaction :

A. 📄 B. 📄 C. 📄

D. 📄

Answer: B



C. 📄

## D. None of these

Answer: C

**D** View Text Solution

$$(II) \xrightarrow[(i) LiAlH_4]{(ii) H_2O} III$$

The basicity order of I, II and III is -

A. III > I > II

 $\mathsf{B}.\, I > II > III$ 

 $\mathsf{C}.\,III>II>I$ 

 $\mathsf{D}.\,II > III > I$ 

Answer: A

20. The correct stability order of the following resonance structures is

$$(I)H_{2}C = \overset{+}{N} = \overline{N} \quad (II)H_{2}\overset{+}{C} - N = \overline{N}$$
$$(III)H_{2}\overline{C} - \overset{+}{N} = N \quad (IV)H_{2}\overline{C} - N = \overset{+}{N}$$
$$A. (I) > (II) > (II) > (IV) > (III)$$
$$B. (I) > (III) > (II) > (II) > (IV)$$
$$C. (II) > (I) > (I) > (II) > (IV)$$
$$D. (III) > (I) > (I) > (IV) > (II)$$

### Answer: B

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21. The correct order of basicities of the following componds is

2.  $CH_3 - CH_2 - NH_2$ 

3.  $(CH_3)_2NH$  O  $A. CH_3 - C - NH_2$  A. 2 > 1 > 3 > 4 B. 1 > 3 > 2 > 4 C. 3 > 1 > 2 > 4D. 1 > 2 > 3 > 4

#### Answer: D

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

A. 📄

в. 📄

C. 📄



## Answer: A



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







Answer: A



24. In which of the following reaction cyanide will be obtained as a major

# product?

A. 
$$Ph - \overset{O}{\overset{||}{C}} - CH_3 \xrightarrow{NH_2 - NH_2}$$
  
B.  $Ph - \overset{O}{\overset{||}{C}} - NH_2 \xrightarrow{NaOH}_{Br_2}$   
C.  $Ph - \overset{O}{\overset{||}{C}} - NH_2 \xrightarrow{P_4O_{10}}$   
D.  $Ph - \overset{O}{\overset{||}{C}} - O - HSOCl_2 \rightarrow \xrightarrow{NH_3}$ 

## Answer: C

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## 25. Choose the appropriate product for this reaction

$$\begin{array}{c} \overbrace{} & 1. \ LiAlH_4 \ (\text{excess}) \\ \hline & 2. \ H_2O^+ \end{array} \end{array} \text{Product}$$



В. 📄

C. 📄
D. 📄
Answer: B
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26. 🛃
Product 'P' in the above reaction is
A. 📄
В. 📄
C. 📄
D. 📄
Answer: B
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## 27. The following reaction is

## A. nucleophilic substitution

B. electrophilic substitution

C. free radical sbstitution

D. electrophilic addition

### Answer: A

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In this reaction, [X] will be -







Answer: A





 $+CH_2=CH-CH_2-CH_2-OH$  A will be :

A.  $CH_2 = CH - \operatorname*{CH}_{H_3} - CH_3$ 

В. 📄



D. 📄

Answer: B

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# Z is

A. a single compound

- B. a mixture of two compounds
- C. a mixture of three compounds
- D. a mixture of four compounds

#### Answer: D

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