CHEMISTRY

FOR IIT JEE ASPIRANTS OF CLASS 12 FOR CHEMISTRY

AMINES & DIAZO COMPOUNDS

W.E

1. Why o-derivative is weaker base than aniline?

A. agtbgtcgtd

B. dgtcgtbgta

C. cgtbgtagtd

D. agtcgtbgtd

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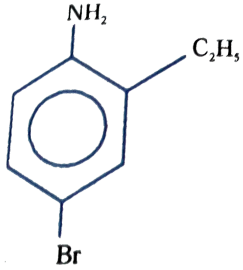
C.U.Q

1. Which of the following systematic name & names are correct for



A) 4 - Bromo - 2 - Ethyl aniline
B) 4 - Bromo - 2 Ethyl Benzenamine
C) 4 - Bromo - 2 - Ethyl Amino benzene
D) 3 - Bromo - 1 - Ethyl benzanamine

A. Only D

B. A and B only

C. A,B,C only

D. a,B,C and D

Answer: C

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2. IUPAC name of $H_2N - CH_2 - CH - CH_3$

A. 1,2-Propane diamine

B. Propanamine 1,2

C. Dipropane 1,2-amine

D. Diamino 1,2 prpane

Answer: A

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3. The structural formula of N-methyl Aminomethane is

A. $(CH_3)_2CHNH_2$

B. $(CH_3)_3N$

C. $(CH_3)_2NH$

D. CH_3NH_2

Answer: C

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4. IUPAC name of $CH_3(CH_2)_2NH_2$ is

A. 1-Propanamine

B. 2-Methyl ethanamine

C. Iso-Propylamine

D. 2^0-Propylamine

Answer: A

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5. IUPAC name of $C_6H_5 - CH_2 - CH_2 - NH_2$

A. 2-phenyl ethanamide

B. 2-phenyl ethanamine

C. 2-phenyl ethylamine

D. 3-phenyl ethanamine

Answer: B

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6. Carbylamine reaction is given by

A. aliphatic 1^0 amines only

B. aromatic 1^0 amines onloy

C. Both aliphatic and aromatic primary amines

D. all secondary amines and diazonium salt

Answer: C

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7. How many primary amines are possible for the formula $C_4H_{11}N$

A. 1

B. 2

C. 3

D. 4

Answer: D

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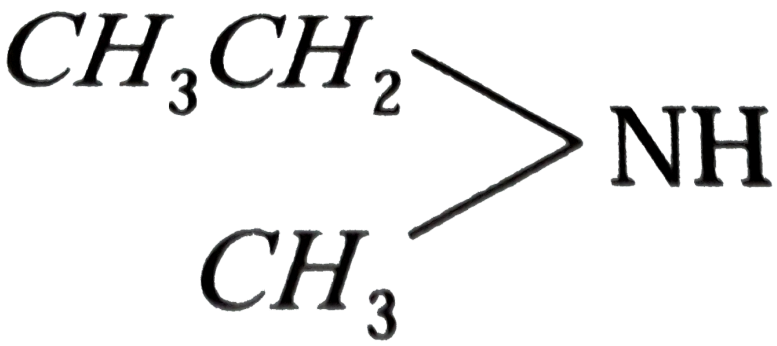
8. Which of the following should be most volatile?

I) $CH_3CH_2CH_2NH_2II)(CH_3)_3NIII)$



IV) $CH_3CH_2CH_3$

A. II

B. IV

C. I

D. III

Answer: B

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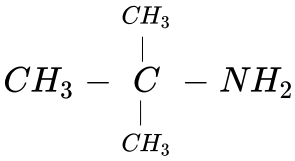
9. The structure given below represents



A. Quarternary ammonium Salt

B. Primary amine

C. Secondary amine

D. Tertiary amine

Answer: B

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10. Aniline is more basic than

A. NH_3

B. CH_3NH_2

C. N-Methyl aniline

D. P-nitroaniline

Answer: D

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11. Which of the following is the strongest base?

A. Aniline

B. N-methyl aniline

C. O-methyl anilin

D. Benzylamine

Answer: D

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12. In the reaction of $C_6H_5OH \xrightarrow[ZnCl_2]{NH_2} X$, $'X'$ may be

A. $C_6H_5NH_2$

B. C_6H_5Cl

C. C_6H_5CHO

D. C_6H_5COOH

Answer: A

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13. During the nitration of aniline, the amino group is protected by

A. converting it to NO_2 group

B. converting it to carboxylic group

C. Acylation

D. Benzoylation

Answer: C

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14. Aniline when treated with benzoyl chloride, gives benzanilide the reaction is known as

A. perkin

B. Hofmann

C. Schotten baumann

D. Benzoin

Answer: C

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15. In phenyl isocyanide the carbons are ____hybridised.

A. sp^3, sp^2

B. sp^3, sp

C. sp^2, sp

D. sp^3

Answer: C

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16. Schiffs base is used as a

A. oxidant

B. hydrolysing agent

C. antichlor

D. antioxidant

Answer: D

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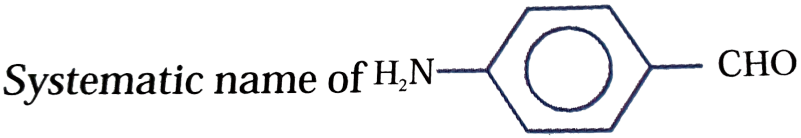
Level -I (C.W)

1. Systematic name of



A. 4-amino benzene carboaldehyde

B. P-amino benzaldehyde

C. 3-amino benzaldehyde

D. 4-formylamine

Answer: A

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2. The IUPAC name of CH_3NH_2 is

A. methylamine

B. amino ethane

C. methanamine

D. Ethylamine

Answer: C

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3. Aniline can be industrially prepared from nitro benzene by using

A. $LiAlH_4$

B. Na/C_2H_5OH

C. Sn/HCl

D. Fe steam and HCl

Answer: D

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4. In Gabriel synthesis, halide may be

A. Benzyl halide

B. Allyl hallide

C. both

D. 3^0 alkyl halide

Answer: C

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5. Which of the following reagents would not be a good choice for reducing an aryl nitro compound to an amine?

A. H_2 (excess) /Pt

B. $LiAlH_4$ in ether

C. Fe and HCl

D. Sn and HCl

Answer: B

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6. Arrange the following in the correct order of their basic character in gaseous phase

$I)NH_3 II)RNH_2 III)R_2NH IV)R_3N$

A. $IV > III > II > I$

B. $III > IV > II > I$

C. $III > II > IV > I$

D. $I > II > III > IV$

Answer: A

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7. Out of the following compounds, which is the most basic in aqueous medium?

A. CH_3NH_2

B. $(CH_3)_2NH$

C. $(CH_3)_3N$

D. $C_6H_5NH_2$

Answer: B

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8. Benzene diazonium chloride is the product when aniline is treated with

A. $NaNO_2$ and HCl at $0 - 5^0$ C

B. HNO_3 and HCl at 4^0C

C. $C_6H_5NO_2$ at 4^0C

D. $NaNO_2$ at $4^\circ C$

Answer: A

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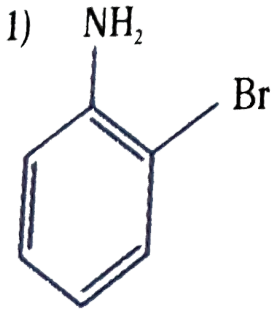
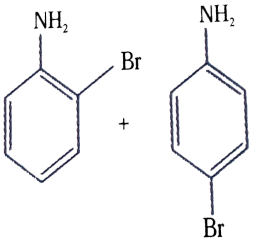
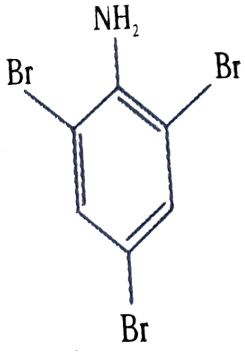
9. Aniline is treated with Br_2 water at room temperature to give the following product

A. 1) 

B. 2) 

C. 

D. 

Answer: D

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10. For the conversion of Aniline to N-Methyle aniline, the reagent used is

A. CH_3I

B. C_6H_5Cl

C. CH_4

D. CH_3NH_2

Answer: A

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

A. acetic acid

B. acetyl chloride

C. dilute HCl

D. methyl alcohol

Answer: B

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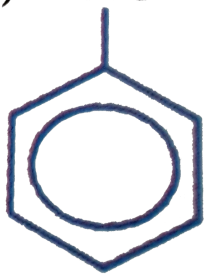
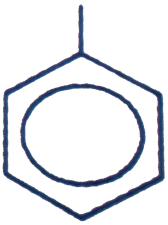
12. Aniline when treated with chloroform in presence of basic medium, gives following compound

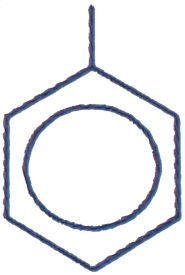
A. 1) NC

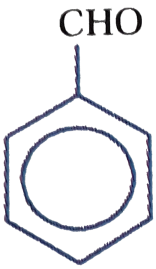


B. 2) NHOH



C. 3) Cl



D. 4) 

Answer: A

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13. 2,4,6 - tribromo aniline is a product of

A. electrophilic addition on $C_6H_5NH_2$

B. electrophilic substitution $C_6H_5NH_2$

C. nucleophilic addition on $C_6H_5NH_2$

D. nucleophilic substitution on $C_6H_5NH_2$

Answer: B

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

A. acetyl chlorde

B. Ammonia

C. Acetone

D. Benzaldehyde

Answer: D

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15. Primary amines can be distinguished from other amines by the following test.

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

B. A and R are true and R is not the correct explanation of A

C. A is true R is false

D. A is false R is true

Answer: C

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16. Assertion: Benzylamine is more basic than aniline.

Reason: NH_2 group is electron releasing group

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

B. A and R are true and R is not the correct explanation of A

C. A is true R is false

D. A is false R is true

Answer: B

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17. Assertion: Acetanilide is more reactive than aniline towards electrophilic substitution reactions.

Reason: The activating effect of $NHCOCH_3$ is less than that of amino group

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

B. A and R are true and R is not the correct explanation of A

C. A is true R is false

D. A is false R is true

Answer: D

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18. Assertion: Aniline does not undergo Friedel-Crafts reactions.

Reason: $-NH_2$ group of aniline reacts with $AlCl_3$ to give acid-base

reaction.

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

B. A and R are true and R is not the correct explanation of A

C. A is true R is false

D. A is false R is true

Answer: A

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19. (A) Carbylamine reaction involves chemical reaction between 1° amine and chloroform in basic medium.

(R) In carbylamine reaction, $-NH_2$ group changes into -NC group.

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

B. A and R are true and R is not the correct explanation of A

C. A is true R is false

D. A is false R is true

Answer: A

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20. Which of the following functional groups undergoes hydrolysis with alkali to yield an acid group

A. $-CHO$

B. $-CN$

C. $-COCH_3$

D. $-Br$

Answer: B

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21. N-ethyl formamide on dehydration with $POCl_3$ in presence of pyridine gives:

A. Ethyl amine

B. Ethyl cyanide

C. Ethyl isocynide

D. Methyl isocyanide

Answer: C

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Level -II (C.W)

1. Aniline is not the major product in one of the following reactions. Identify that reaction.

A. $C_6H_5OH + NH_3 \xrightarrow[300^\circ C]{ZnCl_2}$

B. $C_6H_5CNO_2 + Zn$ powder $\xrightarrow{\text{alcoholic KOH}}$

C. $C_6H_5Cl + NH_3 \xrightarrow[Cu_2O]{200^\circ}$

D. $C_6H_5NO_2 + Fe + H_2O \xrightarrow{HCl}$

Answer: B

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2. Which of the following amines cannot be prepared by Gabriel phthalimide reaction?

A. Benzylamine

B. Aniline

C. Ethylamine

D. Methalylamine

Answer: B

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3. In the Hoffmann Bromamide rearrangement, intermediate species are

A. R-CO-NHBr

B. $\left[R-C\overset{\Theta}{O}N-Br\right]Na^{+}$

C. R-N=C=O

D. All

Answer: D

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4. Acetamide is treated Separately with the following reagents. Which one of these would give methylamine?

A. PCl_5

B. Sodaline

C. $NaOH + Br_2$

D. Hot concentrated H_2SO_4

Answer: C

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5. Among the following the strongest base is

A. $C_6H_5NH_2$

B. $p - NO_2 - C_6H_5NH_2$

C. $m - NO_2 - C_6H_4NH_2$

D. $C_6H_5CH_2NH_2$

Answer: D

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6. Aniline (1 mole) react with bromine to give symmetrical tribromoanline. The amount of bromine required is

A. 3.0 moles

B. 1.5 moles

C. 4.5 moles

D. 6.0 moles

Answer: A

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7. $C_6H_5Cl \xrightarrow[Cu_2O, 200^\circ C]{NH_3} X, X \xrightarrow[0-5^\circ C]{HNO_2} Z, X + Z \rightarrow A$, the no. of σ and π bonds in 'A' are

A. $25\sigma, 6\pi$

B. $25\sigma, 7\pi$

C. $27\sigma, 7\pi$

D. $27\sigma, 6\pi$

Answer: C

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8.

$$CaC_2 \xrightarrow{\text{Hydrolysis}} A \xrightarrow[\text{Cu tube}]{\text{Red hot}} B \xrightarrow[50-60^\circ]{HNO_3 + H_2SO_4} C \xrightarrow{Fe + HCl} D \xrightarrow{NaNO_2 + HCl, 0^\circ C} E$$

Then E is

A. Aniline black

B. Benzene diazonium chloride

C. Phenyl osazone

D. Benzoyl chloride

Answer: B

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9. Aniline reacts with HCl and forms 'X' the type of bonds in X are

A. ionic covalent

B. ionic, covalent, dative

C. only covalent

D. only ionic

Answer: B

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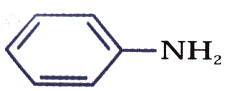
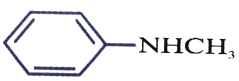
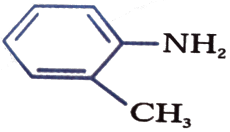
10. Which of the following is the strongest base:

A. 1) 

B. 2) 

C. 3) 

D. 4) 

Answer: D

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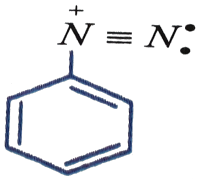
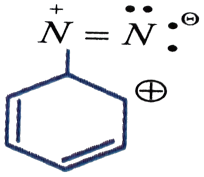
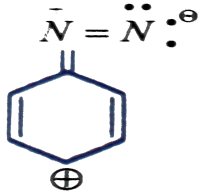
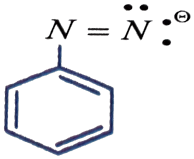
11. Among the following incorrect resonance structure of Benzene diazonium ion is

A. 1) 

B. 2) 

C. 3) 

D. 4) 

Answer: D

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12. Which of the following statement is incorrect?

A. $C_6H_5N_2Cl$ is soluble in water

B. $C_6H_5N_2BF_4$ is water insoluble

C. $C_6H_5N_2Cl$ is stable at room temperature

D. $C_6H_5N_2Cl$ is stable at $0^\circ C$

Answer: C

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13. A positive carbylamine test is given by

A. N,N-dimethyl aniline

B. isopropyl amine

C. diethyl amine

D. trimethyl amine

Answer: A

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14. Acid hydrolysis of methyl isocyanide gives:

A. $CH_3NH_2 + HCOOH$

B. $CH_3NH_2 + CH_3COOH$

C. $C_2H_5NH_2 + HCOOH$

D. $CH_3NH_2 + CH_3CH_2COOH$

Answer: A

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15. Acetaldoxime reacts with phosphorus pentoxide to give:

A. Methyl cyanide

B. Methyl cyanate

C. Ethyl cyanide

D. Ethyl isocyanide

Answer: A

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16. Which of the following products is obtained when methyl isocyanide reacts with chlorine?

A. $CH_3N = CCl_2$

B. $CH_3NCl - CCl_2$

C. $ClCH_2NC$

D. Cl_2CHNC

Answer: A

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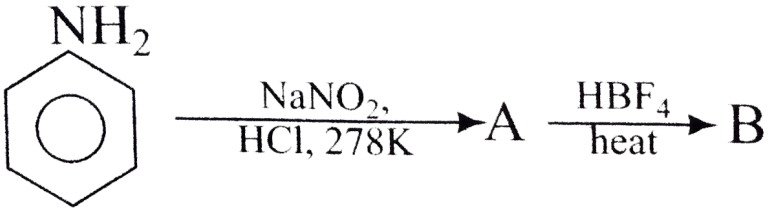
Previous year

1. In the chemical reactions



the compounds (A) and (B) are .

A. nitrobenzene and fluorobenzene

B. phenol and benzene

C. benzene diazonium chloride and flurobenzene

D. nitrobenzene and chlorobenzene

Answer: C

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2. 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_3COOH

B. $CH_3CH_2CH_2COOH$

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

D. CH_3CH_2COOH

Answer: D

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

A. an alkyl cyanide

B. an alkyl isocyanide

C. an alkanol

D. an alkanediol

Answer: B

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4. Considering the basec strength of amines in aqueous solution which one has the smallest pK_b value?

A. $(CH_3)_3N$

B. $C_6H_5NH_2$

C. $(CH_3)_2NH$

D. CH_3NH_2

Answer: C

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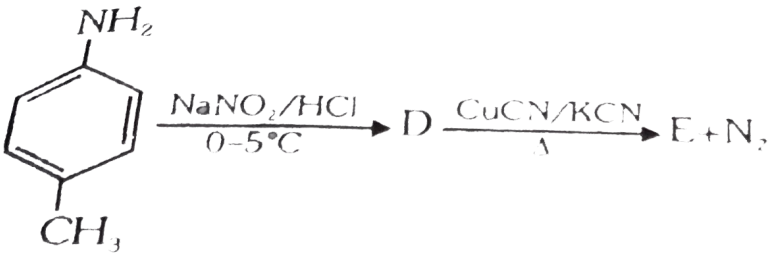
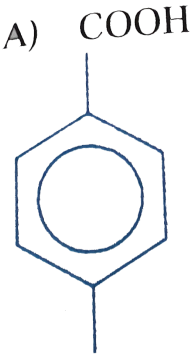
5. In the reaction



the product E is :-

A) 

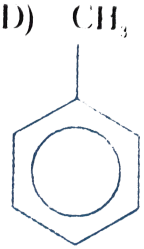
A.

B) 

B.

C) 

C.

D) 

D.

Answer: C

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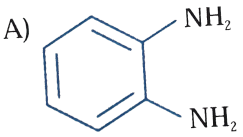
6. Treatment of compound o with $KMnO_4/H^+$ gave P, which on heating with ammonia gave Q. The compound Q on treatment with $Br_2/NaOH$ produced R.On strong heating ,Q gave S, which on furthur treatment with ethyl2-bromopropanate in the presence of

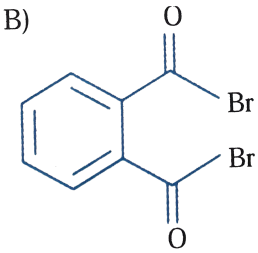
KOH followed by acidfication , gave acidificatin , gave a compound T.4

The compound T is

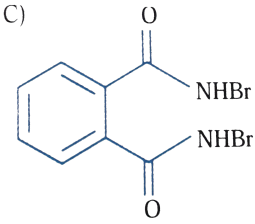
A.



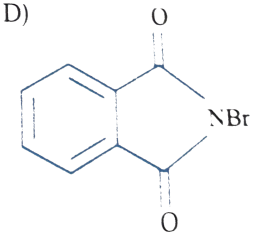
B.



C.



D.



Answer: B

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7. Treatment of compound o with $KMnO_4/H^+$ gave P, which on heating with ammonia gave Q. The compound Q on treatment with $Br_2/NaOH$ produced R.On strong heating ,Q gave S, which on furthur treatment with ethyl2-bromopropanate in the presence of KOH followed by acidfication , gave acidificatin , gave a compound T.4

The compound T is

A. glyceine

B. alanine

C. valine

D. serine

Answer: C

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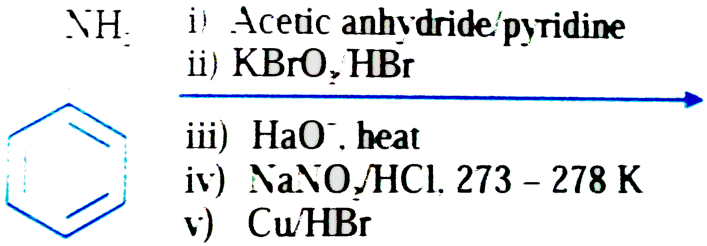
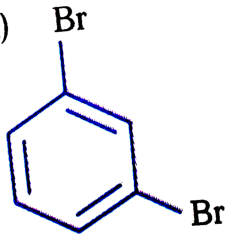
8. The product (s) of the following reaction sequence is (are)



A.



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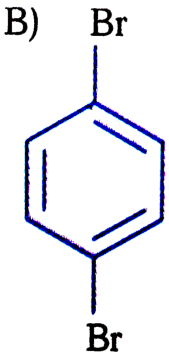
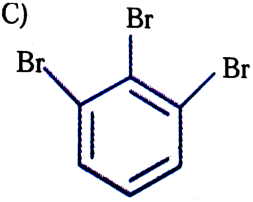
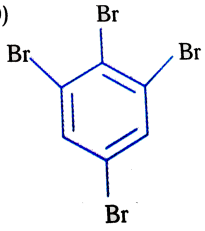


C)



C.

D)



D.

Answer: B

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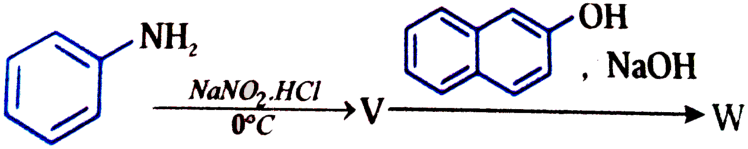
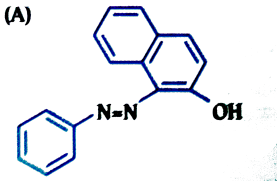
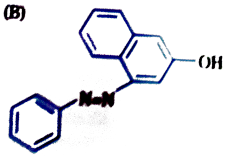
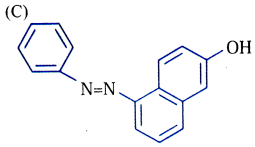
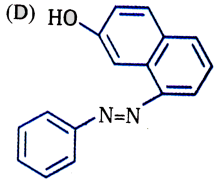
9. In the following reactions, the major product W is



A. 

B. 

C. 

D. 

Answer: A

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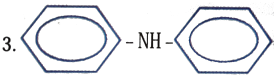
Level -III

1. Maximum pK_b value of

A. $(CH_3)_2NH$

B. $(CH_3CH_2)_2NH$

C. 

D. 

Answer: C

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2. Which of the following orders is true regarding the basic nature of NH_2 group?

A. o-Toluidine gtaniline gto-Nitroaniline

B. o-Toluidine ltAniline gto-Nitroaniline

C. o-Toluidine ltAniline gto-Nitroaniline

D. o-ToluidinegtAniline lt o-Nitroaniline

Answer: B

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3. Hoffmann degradation of m-bromobenzamide gives

A. aniline

B. m-bromoaniline

C. bromobenzene

D. m-bromoethyl benzene

Answer: B

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4. An aromatic amine (X) was treated with alcoholic potash and another compound (Y) when foul smelling gas was formed C_6H_5NC. The compound (Y) was formed by reacting a compound (Z) with Cl_2 in the presence of slaked lime. The compound (Z) is:

A. $C_6H_5NH_2$

B. CH_3OH

C. CH_3COCH_3

D. $CHCl_3$

Answer: C

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5. Which of the following would not react with benzene sulphonyl chloride in aqueous NaOH?

A. aniline

B. methylamine

C. N,N-dimethyl aniline

D. N-methyl aniline

Answer: C

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6. Fluorobenzene (C_6H_5F) can be synthesized in the laboratory .

A. by heating phenol with HF and KF

B. from aniline bydiazotisation followed by heating the diazonium salt with HBF_4

C. by direct fluorination of benzene with F_2 gas

D. by reacting bromobenzene with NaF solution

Answer: B

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7. $CH_3CH_2Cl \xrightarrow{NaOH} X \xrightarrow{Ni//H\_2} Y \xrightarrow[\text{anhydride}]{\text{Acetic}} Z$

Z in the above sequence is

A. $CH_3CH_2CH_2NHCOCH_3$

B. $CH_3CH_2CH_2NH_2$

C. $CH_3CH_2CH_2CONHCH_3$

D. $CH_3CH_2CH_2CONHCOCH_3$

Answer: A

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8. $C_6H_6 \xrightarrow[\text{Conc.}H_2SO_4.363K]{\text{Conc.}HNO_3} X \xrightarrow{(NH_4)_2S_x} Y$

In the above reation sequence, X and Y are

A. Nitrobenzene, aniline

B. m-Dinitrobenzene , m-Phenylenediamine

C. m-Dinitrobenzene, m-Nitroaniline

D. p-Dinitrobenzene , p-nitroaniline

Answer: C

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9. In the given reaction

$$CH_3 - CH_2 - \underset{CH_3}{\overset{CH_3}{\overset{|}{\underset{|}{C}}}} - NH_2 \xrightarrow[Conc.HCl]{NaNO_3}$$

product(s). Product(s) will be

A. $CH_3 - CH_2 - \underset{\underset{CH_3}{|}}{\overset{\overset{OH}{|}}{C}} - CH_3$

B. $CH_3 - CH = \underset{\underset{CH_3}{|}}{\overset{}{C}} - CH_3$

C. $CH_3 - CH_2 - \underset{\underset{CH_3}{|}}{\overset{\overset{Cl}{|}}{C}} - CH_3$

D. All

Answer: D

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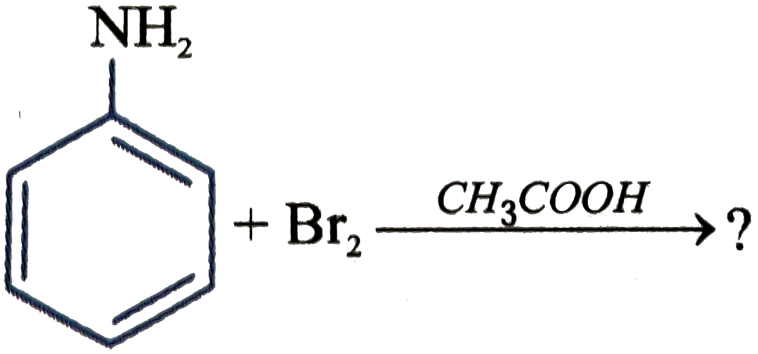
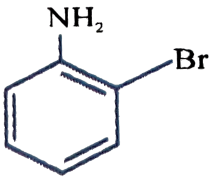
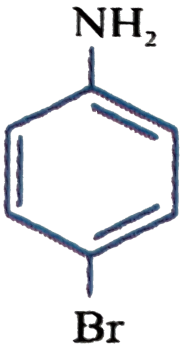
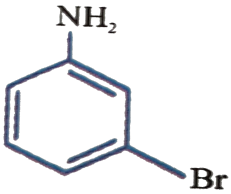
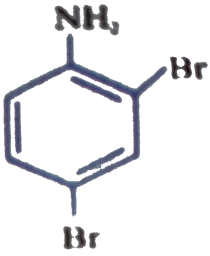
10. Match the following columns



A. 1) 

B. 2) 

C. 3) 

D. 4) 

Answer: C

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11. 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 stiochiometric amount of nitrous acid

D. Neutralise the base liberated

Answer: A

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12. 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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13. Which of the following orders is correct regarding basicity of indicated molecules?

A. N,N-Dimethyl toludinegtp-toluidine gtp-p-nitroaniline

B. AnilinegtN,N-dimethyl -p-toludinegtp-toludine gtaniline

C. p-Toluidine gtN,N-dimethyl-p-toluidinegtaniline gtp-nitroaniline

D. N,N-Dimethyltoluidinegtaniline gtp-toluidine gt p-nitroaniline

Answer: A

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14. Towards electrophilic substitution, the most reactive is

A. anilinium chloride

B. aniline

C. N-acetylaniline

D. nitrobenzene

Answer: B

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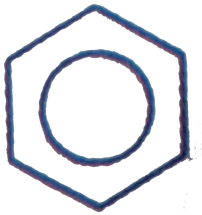
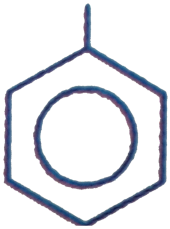
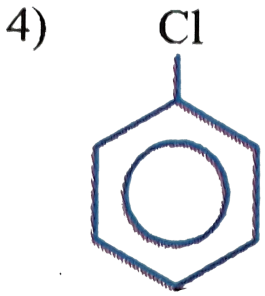
15. Z' in the following sequence of reaction is

$$C_6H_6 \xrightarrow[\Delta]{HNO_3/H_2SO_4} W \xrightarrow{Zn/HCl} X \xrightarrow[HCl,0-5^\circ C]{NaNO_2} Y \xrightarrow{H_2 \frac{\emptyset}{H_3} PO_2} Z$$

A. 1) 

B. 2) 

C. 3) OH 

D. 4) 

Answer: B

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16. The reaction of chloroform with alcoholic KOH and p- toluidine forms

A. 1) 

B. 2) 

C. 3) 

D. 4) 

Answer: C

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17. In the Hofmann's method for separation of 1°, 2° and 3° amines, the reagent used is

A. Acetyl chloride

B. Benzenesulphonyl chloride

C. Diethyl oxalate

D. nitrous acid

Answer: B

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18. Libermann's nitroso reaction is used for testing

A. Aniline

B. N-Methylaniline

C. N-N-Dimethylaniline

D. O-,m- or P-Toluidine

Answer: B

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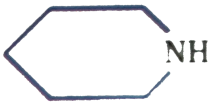
19. Amine which will not respond to Benzoylation reaction is

A. 1) $C_6H_5NH_2$

B. 2) 

C. 3) 

D. 4) $C_6H_5NHCH_3$

Answer: C

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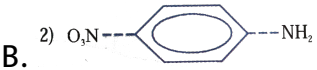
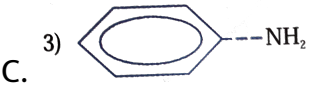
Level -IV

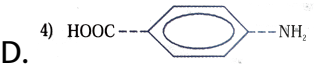
1. Electron releasing group pushes electrons to ward nitrogen and hence increases the availability of lone pair of electrons and thus increases its basicity on the other hand, electron with drawing group decreases the availability hence makes the amine less basic

Among the following which is more basic

A. 1) 

B. 2) 

C. 3) 

D. 4) 

Answer: A

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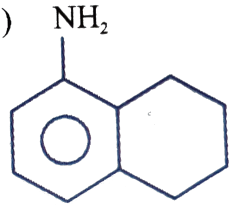
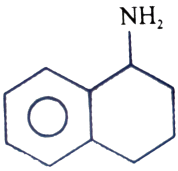
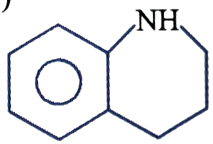
2. Electron releasing group pushes electrons to ward nitrogen and hence increases the availability of lone pair of electrons and thus increases its basicity on the other hand, electron with drawing group decreases the availability hence makes the amine less basic

Which of the following is the strongest base?

A. 1) 

B. 2) 

C. 3)



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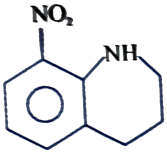

Answer: B

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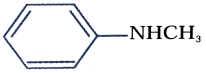
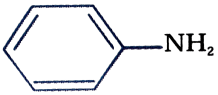
3. Electron releasing group pushes electrons to ward nitrogen and hence increases the availability of lone pair of electrons and thus increases its basicity on the other hand, electron with drawing group decreases the availability hence makes the amine less basic

Which of the following has maximum pK_b value?

A. 1) $CH_3CH_2NH_2$

B. 2) 

C. 3) $(CH_3CH_2)_2NH$

D. 4) 

Answer: D

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4. An aromatic compound 'A' on treatment with aqueous ammonia and heating forms compounds 'B' which on heating with Br_2 and KOH forms a compound 'C' of molecular formula C_6H_7N.

The conversion of B to C is

A. Hoffmann bromamide degradation reaction

B. Bromoform reaction

C. Wurtz fitting reaction

D. Hoffmann mustard oil reaction

Answer: A

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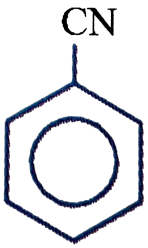
5. An aromatic compound 'A' on treatment with aqueous ammonia and heating forms compounds 'B' which on heating with Br_2 and KOH forms a compound 'C' of molecular formula C_6H_7N.

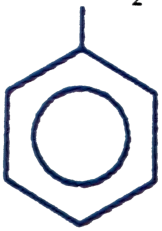
The compound 'B' is

A. 1) $CONH_2$

B. 2) CN



3) NH_2



C.

4) COCl

D.

Answer: A

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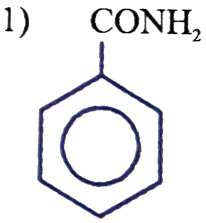
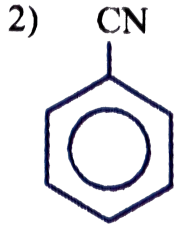
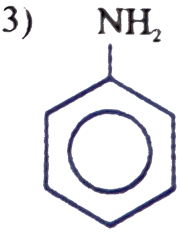
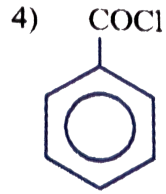
6. An aromatic compound 'A' on treatment with aqueous ammonia and heating forms compounds 'B' which on heating with Br_2 and KOH forms a compound 'C' of molecular formula C_6H_7N.

The compound 'A' may be

A. 1) 

B. 2) 

C. 3) 

D. 4) 

Answer: D

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7. Which of the following is a 3° amine

A. 1-methylcyclohexylamine

B. Triethylamine

C. tert-butylamine

D. N-methyl aniline

Answer: B

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8. The correct IUPAC name for $CH_2 = = CHCH_2NHCH_3$ is

A. allyl methylamine

B. 2-amino-4-pentene

C. 4-aminopent-1 ene

D. N-methylprop-2-en-1-amine

Answer: D

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9. Which of the following reagents would not be a good choice for reducing an aryl nitro compound to an amine?

A. H_2 (excess) /Pt

B. $LiAlH_4$ in ether

C. Fe and HCl

D. Sn and HCl

Answer: B

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10. In order to prepare a 1° amine from an alkyl halide with simultaneous addition of one CH_2 group in the carbon chain, the reagent used as source of nitrogen is.....

A. sodium amide, $NaNH_2$

B. sodium azide, NaN_3

C. potassium cyanide, KCN

D. potassium phthalimide $C_6H_4(CO)_2N^-K^+$

Answer: C

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11. The source of nitrogen in Gabriel syntheisis of amine is..

A. Sodium azide, NaN_3

B. sodium nitrite, $NaNO_2$

C. potassium cyanide, KCN

D. potassium phthalimide $C_6H_4(CO)_2N^-K^+$

Answer: D

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12. Amongst the given set of reactants, the most approprate for preparing 2° amine is .....

A. $2^\circ R-Br+NH_3$

B. $2^\circ R-Br+NaCN$ followed by H_2/Pt

C. $1^\circ R-NH_2+RCHO$ followed by H_2/pt

D. $1^\circ R-Br$ (2mol)+potassium phthalimide followed by H_3O^+ /heat

Answer: C

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13. The best reagent for converting 2-phenylpropanamide into 2-phenylpropanamine is....

A. excess H_2

B. Br_2 in aqueous NaOH

C. iodine in the presence of red phosphorus

D. $LiAlH_4$ in ether

Answer: D

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14. Hofmann's bromamide degradation reaction is shown by

A. $ArNH_2$

B. $ArCONH_2$

C. $ArNO_2$

D. $ArCH_2NH_2$

Answer: B

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15. Which of the following is a 3° amine

A. 1-methylcyclohexylamine

B. Triethylamine

C. tert-butylamine

D. N-methylaniline

Answer: B

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16. Amongst the following, the strongest base in aqueous medium is

A. CH_3NH_2

B. $NCCH_2NH_2$

C. $(CH_3)_2NH$

D. $C_6H_5NHCH_3$

Answer: C

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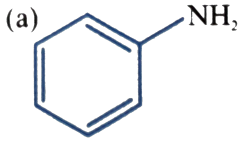
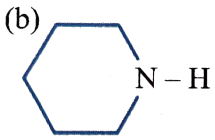
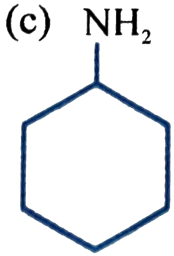
17. Which of the following is the weakest Bronsted base?

A. 

B. 

C. 

D. CH_3NH_2

Answer: A

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18. Benzylamine may be alkylated as shown in the following equation

$C_6H_5CH_2NH_2 + R - X \rightarrow C_6H_5CH_2NHR$

Which of the following alkyl halides is best suited for this reaction through S_N 1 mechanism?

A. CH_3Br

B. C_6H_5Br

C. $C_6H_5CH_2Br$

D. C_2H_5Br

Answer: C

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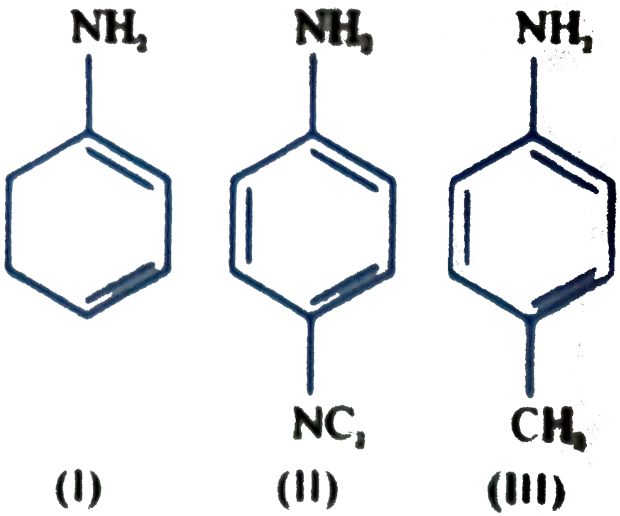
19. The correct increasing order of basic strength of the following compounds is.....



A. $II < III < I$

B. $III < I < III$

C. $III < II < I$

D. $II < I < III$

Answer: D

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20. Methylamine reacts with HNO_2 to form....

A. $CH_3 - 0 - N = 0$

B. $CH_3 - 0 - CH_3$

C. CH_3OH

D. CH_3CHO

Answer: C

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21. The gas evolved when methylamine reacts with nitrous acid is....

A. NH_3

B. N_2

C. H_2

D. C_2H_6

Answer: B

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22. In the nitration of benzene using a mixture of conc. H_2SO_4 and conc. HNO_3 , the species which initiates the reaction is...

A. NO_2

B. NO^+

C. NO_2^+

D. NO_2^-

Answer: C

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23. Reduction of aromatic nitro compounds using Fe and HCl gives...

A. aromatic oxime

B. aromatic hydrocarbon

C. aromatic primary amine

D. aromatic amide

Answer: C

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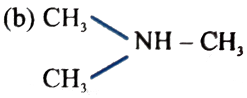
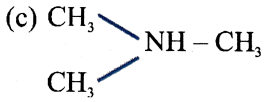
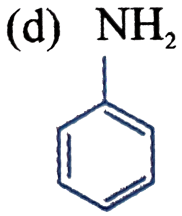
24. The most reactive amine towards dilute hydrochloric acid is...

A. $CH_3 - NH_2$

B. 

C. 

D. 

Answer: B

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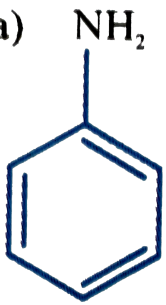
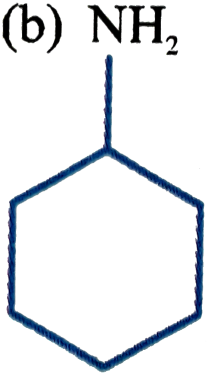
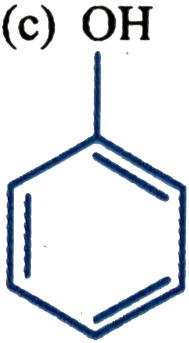
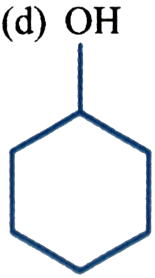
25. Which of the following compounds is the weakest Bronsted base?

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: C

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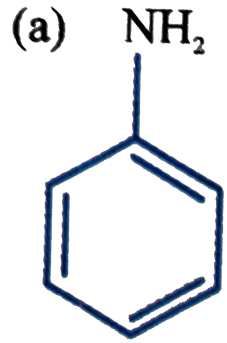
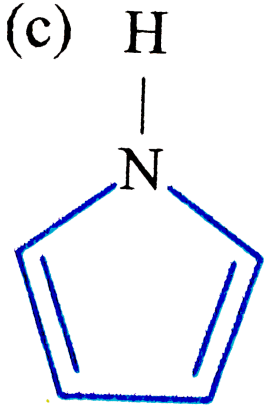
26. Among the following amines, the strongest Bronsted base is....



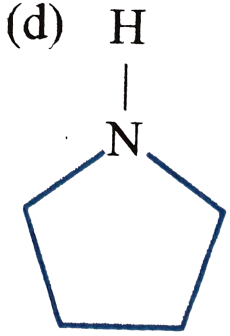
A.

B. NH_3



C.

(d)



D.

Answer: D

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27. The correct decreasing order of basic strength of the following species is ..... H_2O, NH_3, OH^-, NH_2^-

A. $NH_2^- > OH^- > NH_3 > H_2O$

B. $OH^- > NH_2^- > H_2O > NH_3$

C. $NH_3 > H_2O > NH_2^- > OH^-$

D. $H_2O > NH_3 > OH^- > NH_3^-$

Answer: A

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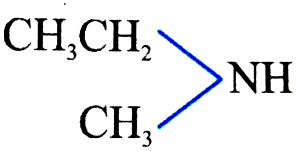
28. Which of the following should be most volatile?

I) `CH_3 CH_2 CH_2 NH_2" " II) " " (CH_3)_3 N " " III) " "



" " IV) CH_3 CH_2 CH_3`

A. II

B. IV

C. I

D. III

Answer: B

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29. The reaction $ArN_2^+Cl^- \xrightarrow{Cu/HCl} ArCl + N_2 + CuCl$ is named as.....

A. Sandmeyer reaction

B. Gattermann reaction

C. Claisen reaction

D. Carbylmine reaction

Answer: B

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30. Which of the following compounds will not undergo azo coupling reaction with benzene diazonium chloride?

A. Aniline

B. Phenol

C. anisole

D. Nitrobenzene

Answer: D

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Level -I (H.w)

1. IUPAC name of aniline

A. phenylamine

B. Amino benzene

C. Bezyl amine

D. Benzenamine

Answer: D

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2. Aniline can be industrially prepared from nitro benzene by using

A. $LiAlH_4$

B. Na/C_2H_5OH

C. Sn/HCl

D. Fe steam and HCl

Answer: C

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3. Gabriel phthalimide synthesis is used in the preparation of

A. Primary atomatic amines

B. secondary amines

C. primary aliphatic amines

D. Tertiary amine

Answer: C

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4. Which of the following pair is correctly matched.

A. Curtius reaction, carboxylic acid

B. Hoffmann rearragement -acid azide

C. Schmidt reaction-carboxylic acid

D. Lossen rearragements-acid chloride

Answer: C

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5. Arrange the following in the correct order of their basic character in gaseous phase

I) NH_3 II) CH_3NH_2 III) $C_6H_5NH_2$

A. `IIIgtIIgtI

B. IIgtIIIgtI

C. IIgtIgtIII

D. I=II=III

Answer: D

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6. When aniline is heated with chloroform and caustic potash solution, we get

A. phenyliso cyanide

B. o-chloroaniline

C. benzoic acid

D. phenol

Answer: A

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7. Aniline dissolves in HCl due to the formation of

A. anilinium chloride

B. o-chloroaniline

C. Azodye

D. diazonium chloride

Answer: A

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8. Acetanilide can be obtained by the following

A. Benzoylation of aniline

B. Alkylation of nitrobenzene

C. Acetylation of aniline

D. reaction between acetaldehyde and aniline

Answer: C

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9. Aniline reacts with excess alkyl halide to give

A. amino compound

B. tertiary compound

C. azomethane

D. quaternary ammonium compound

Answer: D

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10. 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. $(CH_3)_3N$

C. CH_3NH_2

D. $C_6H_5NHC_6H_5$

Answer: C

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11. Aniline on heating with fumig sulphuric acid gives.

A. aniline disulphate

B. sulphanilic acid

C. aniline sulphate

D. aniline-2,4-disulphonic acid

Answer: B

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12. Bromine water reacts with aniline to give

A. o-bromoaniline

B. p-bromoaniline

C. m-bromoaniline

D. symmetric tribromoaniline

Answer: D

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13. N-alkyl aniline is the product of following

A. nitration of benzene

B. Alkylation of aniline

C. Acylation of aniline

D. Benzoylation of aniline

Answer: B

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14. A: Nitration of aniline can only be done by protecting $-NH_2$ group through acetylation. R: Acetylation of aniline results in the

increase of electron density on the benzene ring.

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

B. A and R are true and R is not the correct explanation of A

C. A is true R is false

D. A is false R is true

Answer: C

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15. Match the following

List - I	List - II
A. $Ar\overset{+}{N}_2X^- \xrightarrow[HBr]{CuBr}$	1. ArF
B $Ar\overset{+}{N}_2X^- \xrightarrow[\Delta]{HBF_4}$	2. ArH
C. $Ar\overset{+}{N}_2X^- \xrightarrow{C_2H_5OH}$	3. ArOH
D. $Ar\overset{+}{N}_2X^- \xrightarrow{H_2O}$	4. ArBr

A. A-4 B-1 C-2 D-3

B. A-1 B-2 C-3 D-4

C. A-2 B-3 C-4 D-1

D. A-3 B-4 C-1 D-2

Answer: A

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List-I	List-II
A. HVZ reaction	1. $NaNO_2 + HCl$
B. Clemmensen reduction	2. hydrazine + KOH (alc)
C. Diazotisation	3. Sn / HCl
D. Wolf-Kishner reduction	4. Zn-Hg/ Conc. HCl
	5. Cl_2 / red P

16.

The correct matching is

A. A-3 B-1 C-4 D-3

B. A-5 B-4 C-1 D-2

C. A-2 B-5 C-1 D-3

D. A-1 B-2 C-4 D-5

Answer: B

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17.

List-I	List-II
A. Indigotin	1. White
B. Iodoform	2. blue
C. Oilof wintergreen	3. yellow
D. 2,4,6-tribromo aniline	4. pale yellow to reddishbrown

The correct matching is

A. A-2 B-3 C-4 D-1

B. A-4 B-3 C-2 D-1

C. A-1 B-2 C-3 D-4

D. A-3 B-1 C-2 D-4

Answer: A

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18. Ethyl isocyanide on reduction with sodium and alcohol gives:

A. Ethyl amine

B. propyl amine

C. Dimethylamine

D. ethyl methyl amine

Answer: D

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19. Cyanide is an:

A. Zwitter ion

B. Cation

C. Ambident nucleophile

D. Electrophile

Answer: C

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Level II (H.W.)

1. Which of the following amides will not undergo Hofmann bromamide reaction?

A. CH_3CONH_2

B. $CH_3CH_2CONH_2$

C. $C_6H_5CONH_2$

D. $CH_3CONHCH_3$

Answer: D

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2. Amongst the given set of reactants, the most approprate for preparing 2° amine is .....

A. $2^\circ R - Br + NH_3$

B. $2^\circ R - Br + NaCN$ followed by H_2 / Pt

C. $1^\circ R - NH_2 + RCHO$ followed by H_2 / Pt

D. $1^\circ R - Br$ +Potassium phthalimide followed by H_3O^+ / heat

Answer: C

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3. Zwitter ion is formed by

A. Acetanilide

B. Benzanilide

C. Sulphanilic acid

D. Benzene sulphonamide

Answer: C

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4. Aniline doesn't react with

A. dil. HCl

B. dil NaOH

C. CH_3COCl

D. Br_2 water

Answer: B

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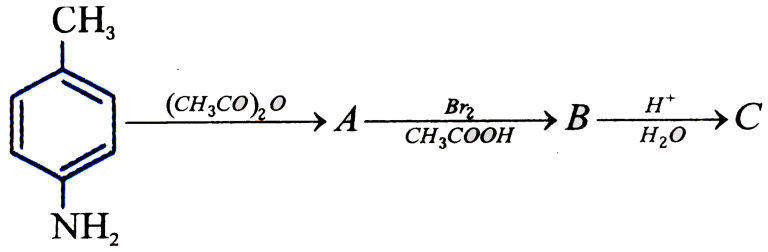
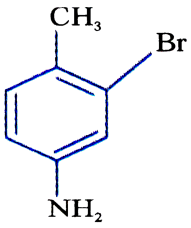
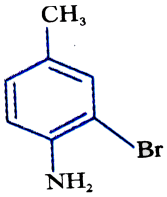
5.

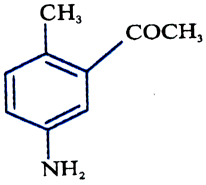


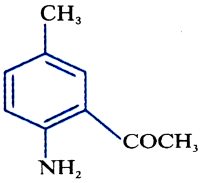
C is

A. 1)



B. 2) 

C. 3) 

D. 4) 

Answer: B

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6. The compound $C_5H_{13}N$ is optically active and reacts with HONO to give $C_5H_{11}OH$. The compound is

A. N-methylbutanamine

B. 2-Aminopentane

C. 1-Aminopentane

D. N,N-Dimethylpropanamine

Answer: B

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7. 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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8. What is the end product in the following sequence of operations?

$$C_2H_5NH_2 \xrightarrow{HNO_2} A \xrightarrow{PCl_5} B \xrightarrow{\text{alc.}NH_3} C$$

A. ethyl cyanide

B. methyl amine

C. ethyl amine

D. acetamide

Answer: C

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9. Which of the following shows optical acivity?

A. butan-1-amine

B. butan-2-amine

C. isopropylamine

D. ethyl methyl amine

Answer: B

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10. In the reaction,

$$C_6H_5NH_2 \xrightarrow[0-5^\circ C]{NaNO_2+HCl} (A) \xrightarrow[KCN]{CuCN} (B) \xrightarrow{H^+/H_2O} (C)$$

the product (C) is

A. $C_6H_5CH_2NH_2$

B. C_6H_5COOH

C. C_6H_5OH

D. all the above

Answer: B

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11. Which of the following converts Benzene diazonium chloride to Benzene?

A. H_3PO_3

B. C_2H_5OH

C. H_2O

D. HBF_4

Answer: B

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12. Which of the following can distinguish the three amines, viz..., primary , secondary and tertiary?

A. Azo -dye test

B. Hinsberg reagent

C. Carbylamine test

D. Acetyl chloride

Answer: B

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13. Aniline and diphenylamine may be distinguished by

A. Lassaigne test

B. Schiff's test

C. Carbyl amine reaction

D. Solubility test

Answer: C

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14. The only stable organic functional group in which carbon is divalent is

A. : CCl_2

B. : CH_2

C. : CBr_2

D. R-NC

Answer: D

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15. Electrophilic and Nucleophilic reagents give addition on the same atom of the molecule in

A. Cyanide

B. Isocyanide

C. Aldehyde

D. Ketone

Answer: B

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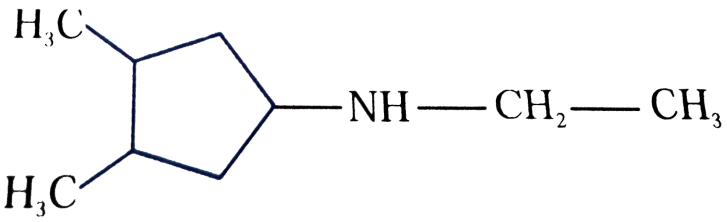
Level V

1. The IUPAC name of the amine is :



A. N-Ethyl 2, 3 dimethyl cyclopentanamine

B. N-ethyl 3,4 dimethyl cyclopentanamine

C. N-3,4 dimethyl cyclopentanamine ethanamine

D. N-Ethyl 3,3 dimethyl cyclopentanamine.

Answer: B

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2. The pyramidal inversion from one invertomer of chiral tetrahedral amine to another takes place via

A. Carbocationic intermediate

B. Anionic nitrogen intermediate

C. Cationic nitrogen intermediate

D. Planar nitrogen

Answer: D

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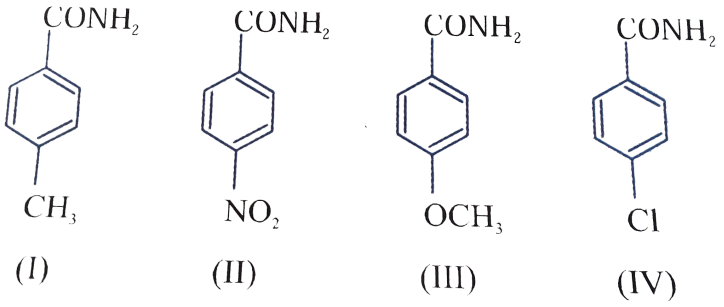
3. The rate of Hoffmann's bromamide degradation with following amide will follow the order:



A. $III > I > IV > II$

B. $II > IV > I < III$

C. $I > II < III < IV$

D. $I > III > IV > II$

Answer: A

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

A. $CH_3 - NH_CH_3$

B. $CH_3 - C \equiv N$

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

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

Answer: D

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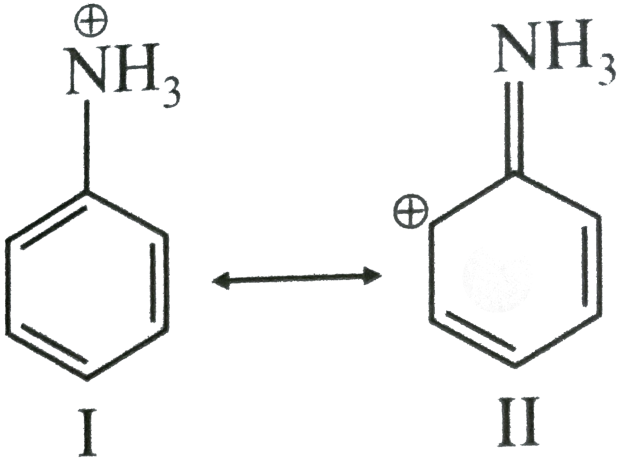
5.



I II

Examine the following two structures for the anilinium ion and choose the correct statement from the ones given below:

A. II is not acceptable canonical structure because carbonium ions are less stable than ammonium ions

B. II is not an acceptable canonical structure because it nonarmatic

C. II is not an acceptable canonical structure because nitrogen has 10 valence electrons

D. II is an acceptable canonical structure

Answer: C

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6. Amongst the following the most basic compound is :

A. Benzylamine

B. Aniline

C. Acetanilide

D. P-nitroaniline

Answer: A

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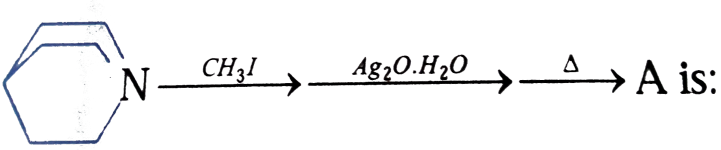
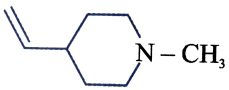
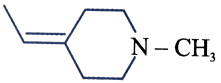
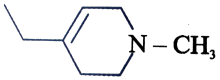
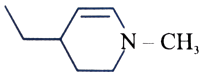
7. 

is:

A. A) 

B. B) 

C. C) 

D. D) 

Answer: A

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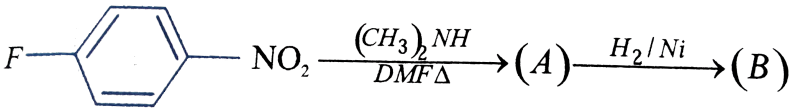
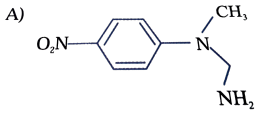
8. Complete the following reaction



A.



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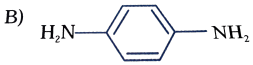

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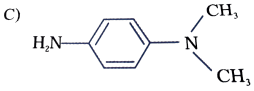
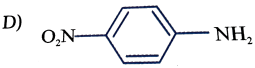


D.



Answer: C

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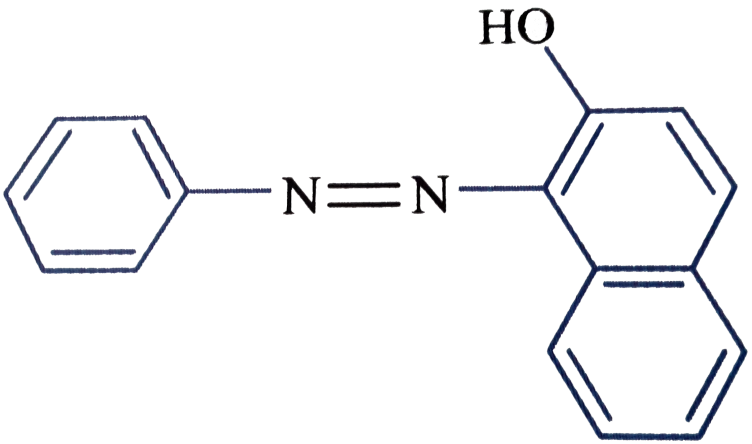
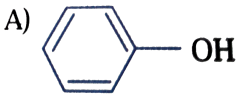
9. The



which is a red azo dye obtained on reacting benzene diazonium chloride with one of the following compounds.

A.



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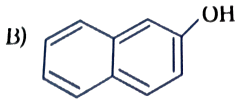
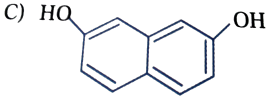
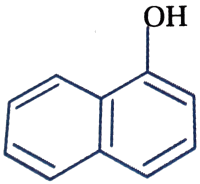


C.



D) 

D.

Answer: B

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10. The best method for the preparation of primary amines is

A. $R - X \xrightarrow{NH_2} R - NH_2$

B. $R - X \xrightarrow[(ii)\, LiAlH_4]{(i)\, NaN_3} R - NH_2$

C. $R - OH \xrightarrow[Al_2O_3 / \Delta]{NH_3} R - NH_2$

D. $R - X \xrightarrow{NaNH_2} R - NH_2$

Answer: B

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11. Acetophenone can be converted into amine in a single step by

A. Br_2 / KOH

B. H_2O / OH^-

C. $NH_3 / H_2, Ni / \Delta$

D. NH_2OH

Answer: C

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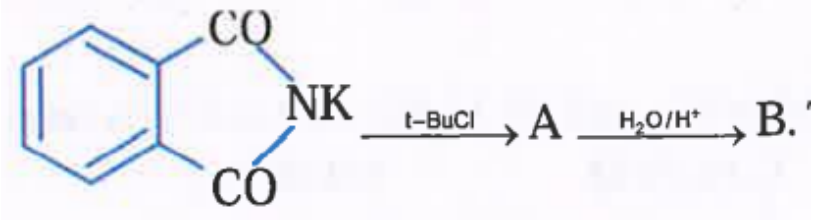
12.



.The final product is

A. 1,3-butadiene

B. t-Bu-NH_2

C. isobutene

D. isobutanol

Answer: C

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13. N-ethyl formamide on dehydration with $POCl_3$ in presence of pyridine gives:

A. Ethyl isocyanate

B. Ethyl isocyanide

C. Acetaldoxime

D. Ethyl cyanide

Answer: B

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14. Piperidine is a secondary amine, which is subjected to Hofmann elimination. The alkene formed as a final product is

A. 1,3-butadiene

B. 1,4-pentadiene

C. 1,3-butadiyne

D. 1,2-pentadiene

Answer: B

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15. An organic compound with molecular formula C_3H_5N on hydrolysis gives an acid. The acid on heating with N_3H and conc. H_2SO_4 gives

A. Propanamide

B. Ethyl acetate

C. Methyl amine

D. Ethyl amine

Answer: D

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16. $R - C \equiv N$ can be reduced to RCH_2NH_2 using the reducing agent.

A. $H_2N - NH_2$

B. H_2 / Ni

C. $NaOBr$

D. $LiAlH_4$

Answer: A::B::D

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17. Tertiary amines may be obtained by:

A. Gabriel phthalimide synthesis

B. heating an alcoholic solution of ammonia with excess of Rx

C. the hydrolysis of dialkyl cyanamide

D. thermal decompostion of quanternary ammonium hydroxide

Answer: B::D

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18. $CH_3CH_2NH_2$ is soluble in

A. dilute HCl

B. $CuSO_4$ sol

C. $AgNO_3$

D. $dil.\ H_2SO_4$

Answer: A::B::C::D

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19. Which of the following statements is/are correct?

A. Primary amines show intermolecular hydrogen bonding

B. Secondary amines shown intermolecular hydrogen bonding

C. Tertiary amines show intermolecular hydrogen bonding

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

Answer: A::B::D

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20. Which of the following statements is/are correct?

A. Aliphatic amines are stronger bases than ammonia

B. Aromatic amines are stronger bases than ammonia

C. The alkyl group in alkyl ammonium ion stablizes the ion more relative to the amine

D. The aryl group in aryl ammonium ion stabilizes the ion less relative to the amine

Answer: A::C::D

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21. Which of the following statements is/are correct?

A. In gas phase the basic strength order among the three types of amines is $3^\circ > 2^\circ > 1^\circ$

B. Among the isomeric amines boiling points order is $3^\circ > 2^\circ > 1^\circ$

C. Alcohols are more water soluble than amines (of comparable molecular weight)

D. The C-N bond in aromatic amines is shorter than that of in aliphatic amines

Answer: A::C::D

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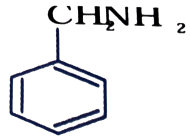
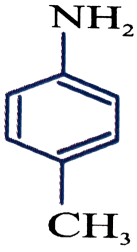
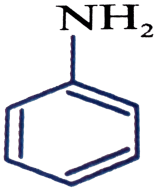
22. Which of the following amine(s) after diazotization will form deeply coloured azodye with alkaline solution of β-naphthol:

A. (A) 

B. (B) 

C. (C) 

D. (D) 

Answer: B::D

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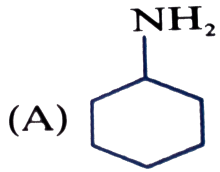
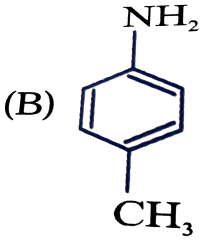
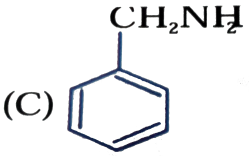
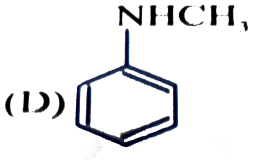
23. The amines that will give off N_2 upon treatment with $NaNO_2$ and dil. H_2SO_4 at 0 to $5^\circ C$ is (are)

A. 

B. 

C. 

D. 

Answer: A::C

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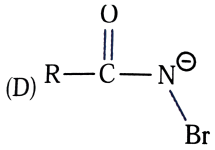
24. Reaction of $R-\overset{\overset{O}{||}}{C}-NH_2$ with a mixture of Br_2 and KOH gives $R-NH_2$ as the main product. The intermediates involved in this reaction are :

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

B. R-NHBr

C. R-N=C=O

(D) 

D.

Answer: A::C::D

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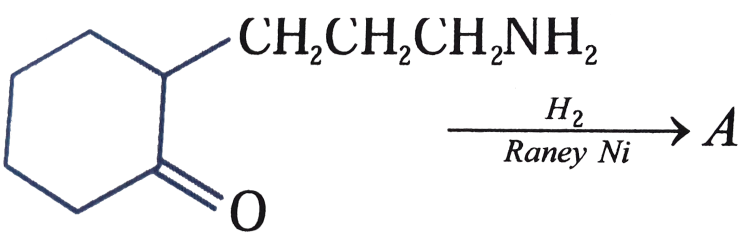
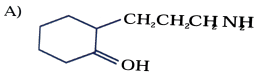
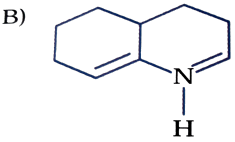
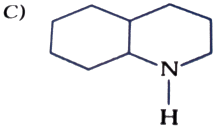
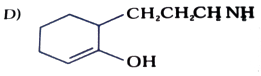
25. Complete the following reaction



A. 

B. 

C. 

D. 

Answer: C

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26. Assertion: Carbyl amine is given by secondary amines only

Reason: Aniline can give carbyl amine test

A. If both assertion and reason are correct, and reason is the correct explanation of the assertion

B. if both assertion and reason are correct, but reason is NOT the correct explanation of the assertion.

C. If assertion is Correct, but reason in incorrect.

D. If assertion is Incorrect, but reason is correct

Answer: D

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27. Assertion: The carbon-nitrogen bond in aniline is strognerg than the carbon-nitrogen bond in methyl amine.

Reason: The C-N bond in aniline have partial double bond character.

A. If both assertion and reason are correct, and reason is the correct explanation of the assertion

B. if both assertion and reason are correct, but reason is NOT the correct explanation of the assertion.

C. If assertion is Correct, but reason in incorrect.

D. If assertion is Incorrect, but reason is correct

Answer: A

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28. Assertion: $-NH_2$ group is less ring activating than $-NHCOCH_3$ group

Reason: Because in $-NHCOCH_3$ the lone pair on N atom is conjugated not only with benzene nucleus but also with $>C=O$ group called cross-conjugated.

A. If both assertion and reason are correct, and reason is the correct explanation of the assertion

B. if both assertion and reason are correct, but reason is NOT the correct explanation of the assertion.

C. If assertion is Correct, but reason in incorrect.

D. If assertion is Incorrect, but reason is correct

Answer: D

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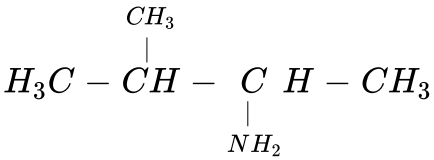
29. Assertion: The amine



Upon reaction with HNO_2 will give six optically active alcoholic products

Reason: During the reaction there is formation of carbocationic intermediate which may rearrange.

A. If both assertion and reason are correct, and reason is the correct explanation of the assertion

B. if both assertion and reason are correct, but reason is NOT the correct explanation of the assertion.

C. If assertion is Correct, but reason in incorrect.

D. If assertion is Incorrect, but reason is correct

Answer: D

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30. Assertion: Less substituted alkenes are formed in both Hoffmann and Cope elimination reactions.

Reason: Hoffmann elimination and Cope elimination both are syn elimination reactions.

A. If both assertion and reason are correct, and reason is the correct explanation of the assertion

B. if both assertion and reason are correct, but reason is NOT the correct explanation of the assertion.

C. If assertion is Correct, but reason in incorrect.

D. If assertion is Incorrect, but reason is correct

Answer: C

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31. Complete the following reaction

List – I Conversions
(A) $R—CHO \rightarrow RCH_2NH_2$
(B) $RCONH_2 \rightarrow RNH_2$
(C) $RCONH_2 \rightarrow RCH_2NH_2$
(D) $RCN \rightarrow RCH_2NH_2$

List – II Reactions
(p) Hofmann's bromamide degradation
(q) Reduction with H_2/Ni
(r) Reduction with $LiAlH_4$
(s) Reductive amination

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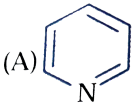
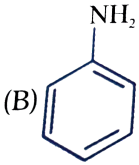
32. Match the following columns

List – I Amines

(A) 

(B) 

(C) $CH_3CH_2NH_2$

(D) CH_3NH_2

List – II pK_b values

(p) 3.3

(q) 8.8

(r) 3.35

(s) 9.4

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33.

List – I

(A) $LiAlH_4$ reduction of nitrile into 1°-amine

(B) Hofmann's bromamide reaction

(C) Carbylamine reaction

(D) Gabriel phthalamide synthesis

List – II

(p) Degradation of carbon chain

(q) Carbene intermediate

(r) Nucleophilic attack

(s) Carbocationic intermediate

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34.

List – I Reactions	List – II Intermediates
(A) Carbylamine reaction	(p) Electrophile
(B) Diazo reaction	(q) Carbene
(C) Reaction of 1° -amine with HNO_2	(r) Carbocation
(D) Coupling reaction	(s) Carbanion

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35.

List – I Reaction	List – II Compounds prepared
A) Gabriel's phthalimide method	p) 1° aryl amine
B) Strecker synthesis	q) α-amino acids
C) Beckmann rearrangement	r) 1° - alkyl amine
D) Hofmann rearrangement	s) N-substituted amides

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36. How many aromatic (six membered carbocyclic) isomers possible for MF C_7H_9N.

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37. What is the No. of isomers with pyridine nucleus possible for compounds having MF C_7H_9N?

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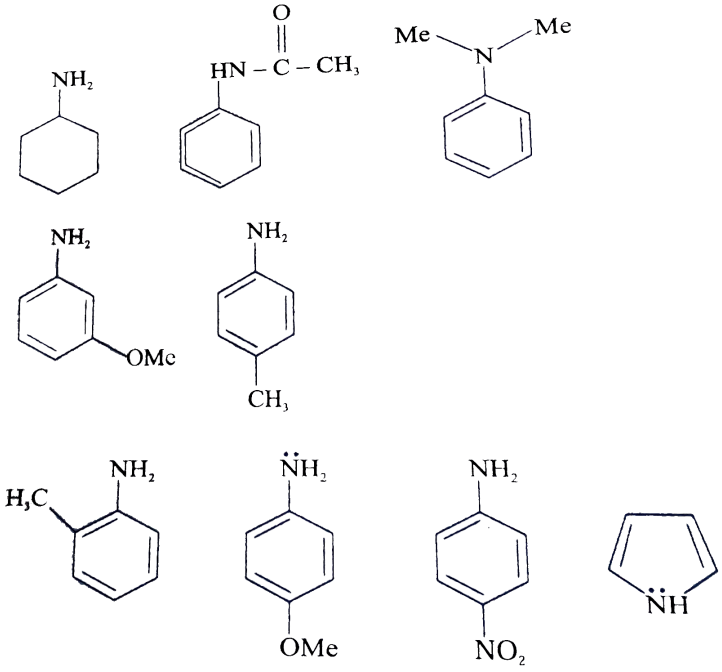
38. Among the following compounds how many of them is more basic than aniline?



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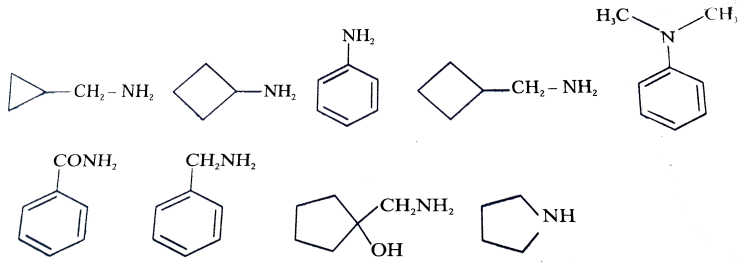
39. How many of the below listed compounds on treatment with HNO_2 would go for ring expansion?



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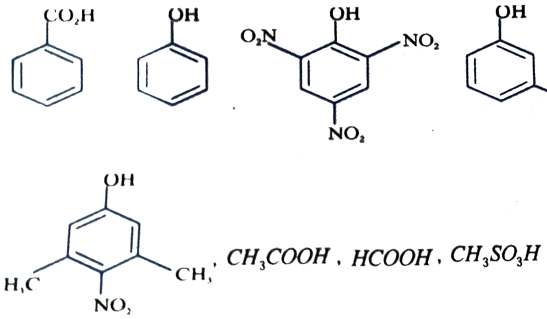
40. How many of below listed compounds are soluble in aq. NaOH but insoluble in aq. $NaHCO_3$.



CH_3COOH , $HCOOH$, CH_3SO_3H

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41. The total number of organic products formed at the end of the reaction sequence is/are

$$C_6H_5 - CO - CH_3 \xrightarrow{NH_2OH} \xrightarrow{P_2O_5} H_2O/OH^- \rightarrow$$

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42. Urea reacts with Br_2 in dil HCl to liberate N_2 How many moles of bromine is required to completely react with one mole of urea ?

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43. How many isomeric butanes are formed by the diazotization of $n - Bu - NH_2$?

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44. How many mole of NaOH are consumed in Hoffmann Bromamide reaction?

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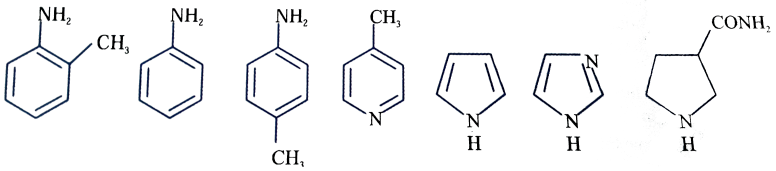
45. How many of the following amines are more basic than aniline?



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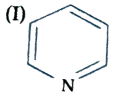
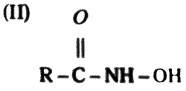
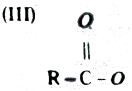
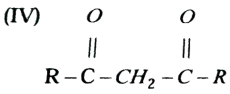
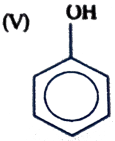
46. Among how many give positive $FeCl_3$ test.

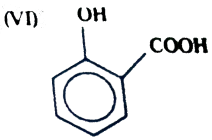


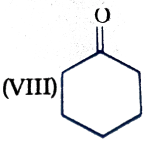


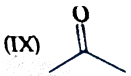












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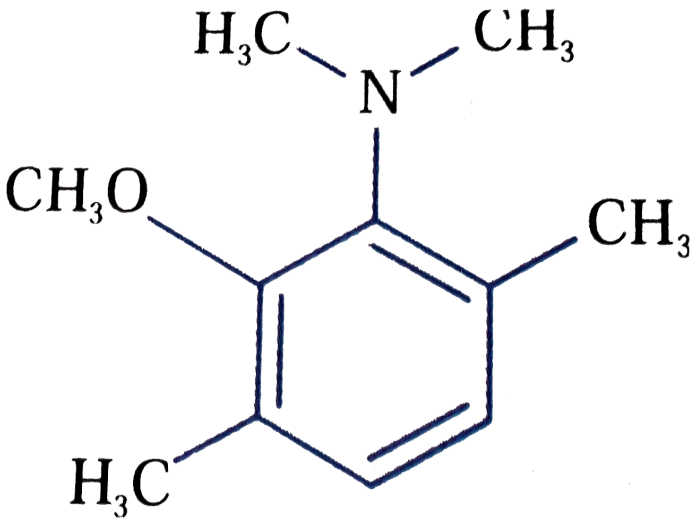
Level -VI

1. The correct IUPAC name of the amine:



A. N,N Dimethyl 3,6 dimethyl 2-methoxy benzenamine

B. N,N dimethyl 2,5-dimethyl 6-methoxy benzenamine

C. N,N dimethyl 2-methoxy 3,6 dimethyl, benzenamine

D. 1-N,N diemthyl , 2-5 dimethyl, phenyle methyl ether

Answer: A

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2. If a mixture of $C_2H_5CONH_2$ and $PhCONH_2$ is subjected to Hoffmann's bromamide degradation, the product mixture of amines will consist of

A. $C_2H_5\overset{+}{N}H_2$ and $PhNH_2$

B. $C_2H_5NH_2$ and $Ph\overset{+}{N}H_2$

C. $C_2H_5NH_2$, $C_2H_5\overset{+}{N}H_2$, $PhNH_2$ and $Ph\overset{+}{N}H_2$

D. $C_2H_5\overset{+}{N}H_2$ and $Ph\overset{+}{N}H_2$

Answer: B

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3. In the reaction of p-chlorotoluene with KNH_2 is liguid NH_3 the major product is .

A. o-toluidine

B. m-toluidine

C. p-toluidine

D. p-chloroaniline

Answer: B

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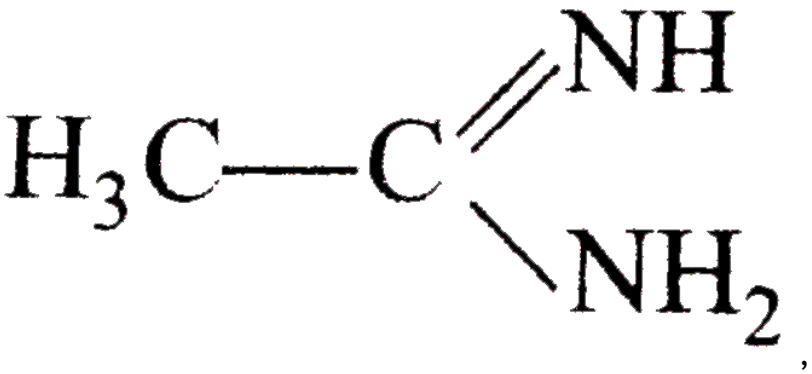
4. The correct order of basicities of the following compounds is



$CH_3CH_2NH_2$ (2)

$(CH_3)_2NH$ (3) CH_3CONH_2 (4)

A. 2gt1gt3gt4

B. 1gt3gt2gt4

C. 3gt1gt2gt4

D. 1gt2gt3gt4

Answer: B

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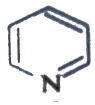
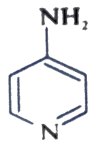
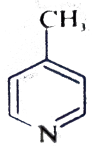
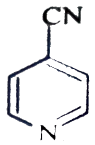
5. The correct order of increasing basicity for the following compounds is

(I) 

(II) 

(III) 

(IV) 

A. IVltIltIIIltII

B. IltIIltIIIltIV

C. IVltIIIltIIltI

D. IIltIVltIltIII

Answer: A

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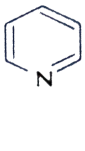
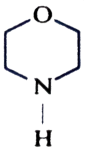
6. The order of basicity of the following compounds is

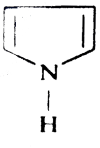
I



II



III



IV

A. $IV > I > III > II$

B. $III > I > IV > II$

C. $II > I > III > IV$

D. $I < III < II < IV$

Answer: D

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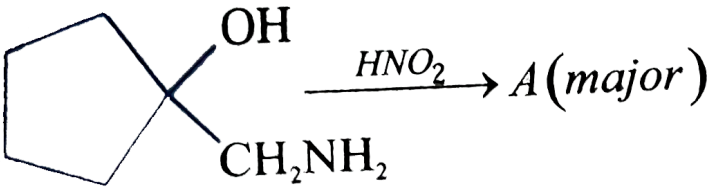
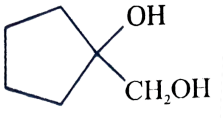
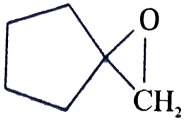
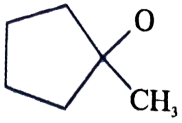
7. Complete the following reaction



A. (A) 

B. (B) 

C. (C) 

D. (D) 

Answer: D

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8. An amine on treatment with HNO_2 evolved N_2 The amine on exhaustive methylation with CH_3I formed a quarteranary salt containing $95.07\,\%$ iodine . The amine is likely to be:

A. CH_3NH_2

B. $(CH_3)_2NH$

C. $C_2H_5NH_2$

D. $(CH_3)_2N$

Answer: C

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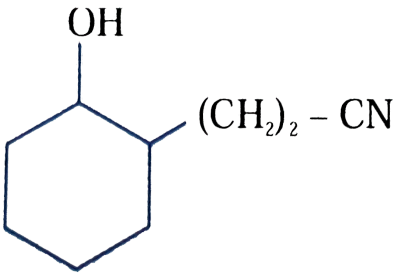
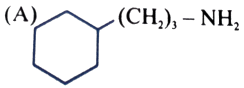
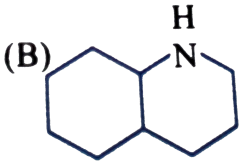
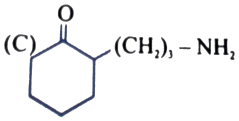
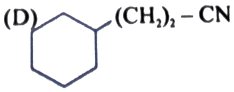
9. 

A. A is

A. 

B. 

C. 

D. 

Answer: B

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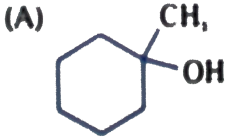
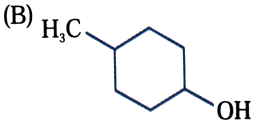
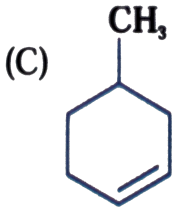
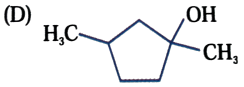
10. Which of the following is not formed in the reaction?

A. 

B. 

C. 

D. 

Answer: A

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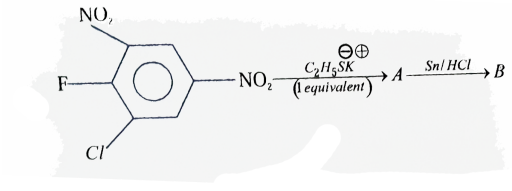
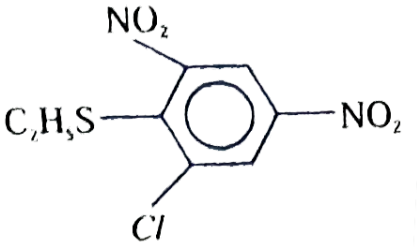
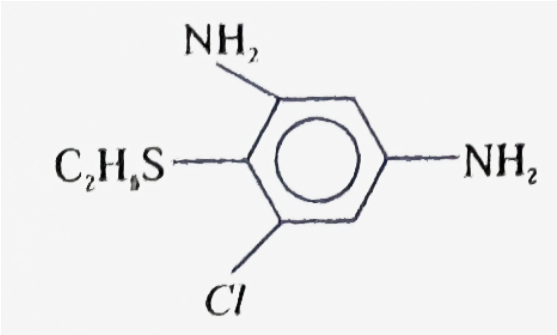
11. 

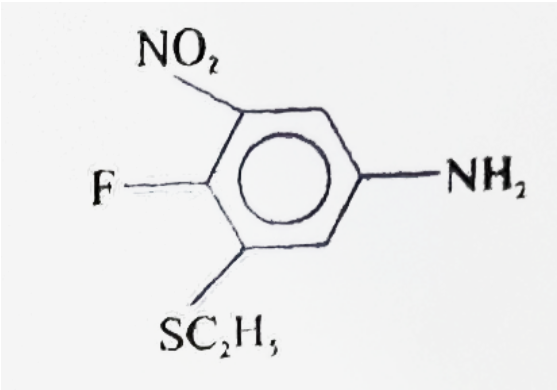
In the above reaction sequence B is :

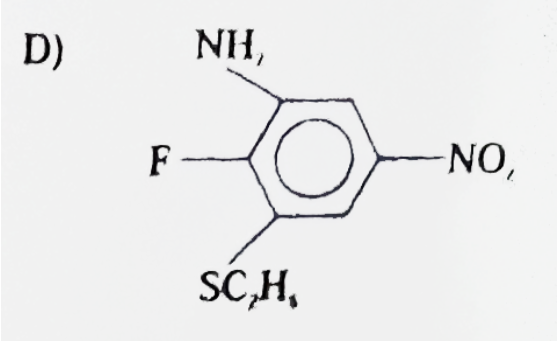
In the above reaction sequence B is:

A) 

A.

B. 

C. 

D. 

Answer: B

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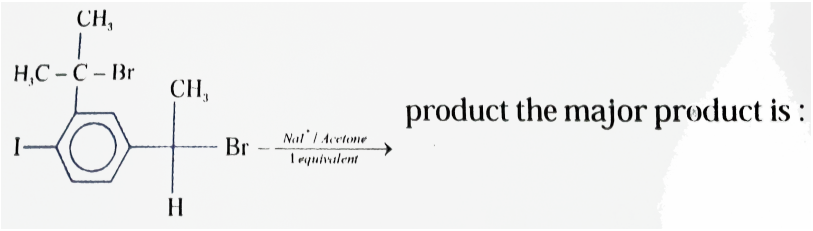
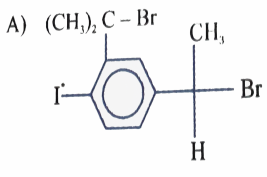
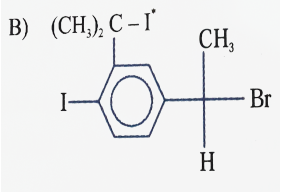
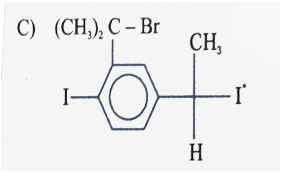
12. 

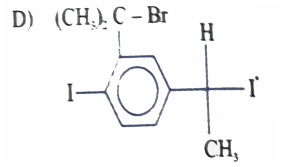
product the major product is :

product the major product is:

A. 

B. 

C. 

D. 

Answer: D

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Multiple answre type q.

1. Reaction involves isocyanate as intermediate product

A. Curtuis rearrangement

B. Lossen rearrangement

C. Schmidt reaction

D. Hofmann rearragement

Answer: A::B::C::D

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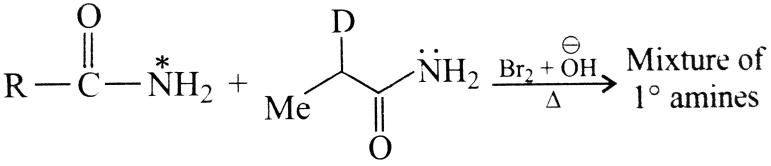
2. Which statements are correct about the reaction?



A. A mixture of two amines is formed, which suggests that rearragements is intermolecular

B. If R is chiral, it migrates with retention of configuration

C. A mixture of four different amines is formed, which suggests that a free acyl nitrene $\left[R-\overset{O}{\overset{||}{C}}-\ddot{N}:\right]$ intermodiate is formed

D. A mixture of two different amines and a free acyl nitrene intermediate is formed

Answer: A::B

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3. Which of the following give(s) aniline by reduction of nitrobenzene?

A. H_2 / Ni

B. Sn/HCl

C. $NaBH_4$

D. $LiAlH_4$

Answer: A::B

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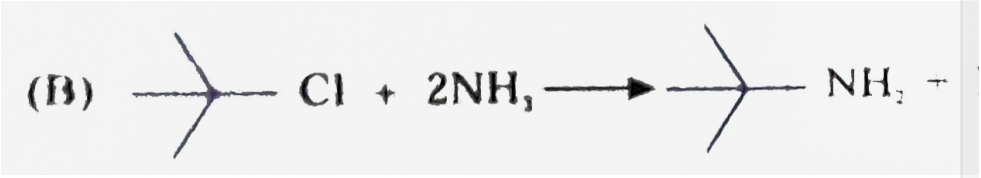
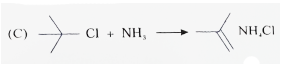
4. Which is/are correct reaction(s) w.r.t major product

A.

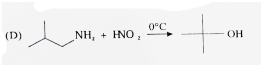
B.



C.



D.



Answer: C::D

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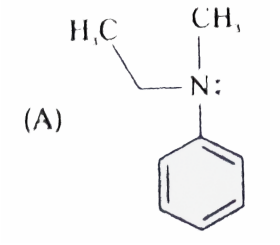
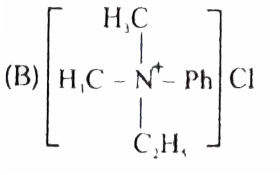
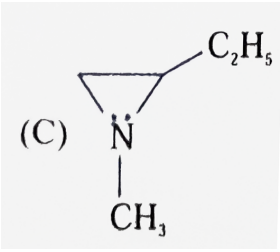
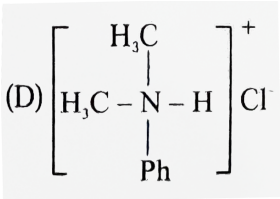
5. Which of the following compound(s) is (are) resolvable?

A. 

B. 

C. 

D. 

Answer: C::D

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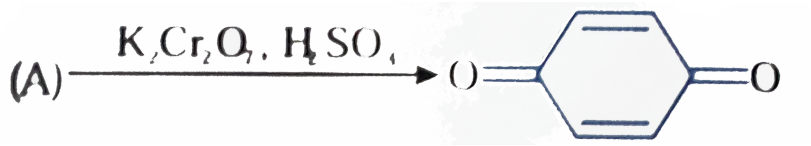
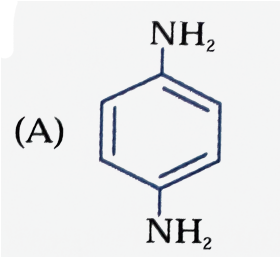
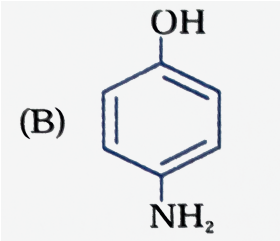
6. Identify compound (A) in the following oxidation reaction.

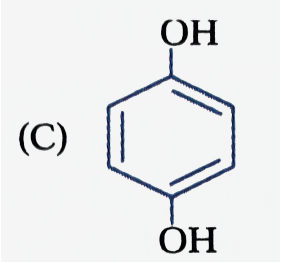


A.



B.



C. 

D. 

Answer: A::B::C

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7. Primary and secondary amines can be distinguished by the action of:

A. $CS_2 / HgCl_2$

B. $NaNO_2 / HCl$

C. $CHCl_2 / KOH$

D. NaOH

Answer: A::B::C

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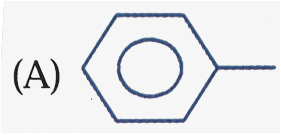
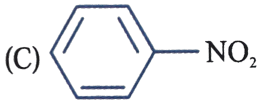
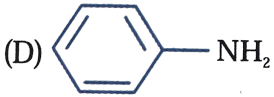
8. Which of the following give(s) Liebermann's nitroso reaction

A. 

B. $C_6H_5 - NH - CH_3$

C. 

D. 

Answer: A::B

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9. Which statement is correct?

A. Phenol and aniline give coupling reaction with diazonium salt

B. Phenol couples with diazonium salt in mild basic conditions (pH=8-10)

C. Aniline couples with diazonium salt in mild acidic condition (pH=4-6)

D. Both phenol and aniline couple with diazonium salt in neutral condition (pH=7)

Answer: A::B::C

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10. Which of the following reactions are correct?

A. 

B. 

C. 

D. 

Answer: C::D

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11. Which of the following statements are correct?

A. Aryldiazonium ions are more stable than alkyldizonium ions

B. Electron release from the ortho and para-positions of the ring stablizes the aryldiazonium ion

C. The increases stability of arylidiazonium is due to the greate difficulty of forming $Ar^{\oplus}$

D. Alkyldizonium is more stable than aryldizonium ion

Answer: A::B::C

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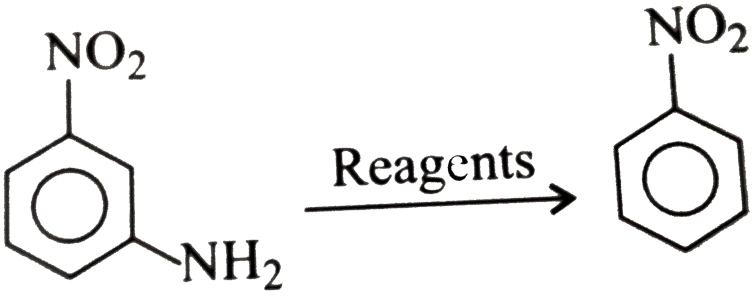
12. Which of the following reagents are correct for the given reaction?



A. (i) $NaNO_2 + HCl, 0 - 5^\circ C (ii) H_3PO_2$

B. $(i) KNO_2 + HBr, 0 - 5^\circ C (ii) Na_2SnO_2$

C. $(i) HNO_2 (ii) C_2H_5OH$ and heat

D. (i) $KNO_2 + HCl (ii) H_2O$ (steam)

Answer: A::B::C

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13. Cyclohexyl amine and pyrrolidine are distingsuished by

A. $NaNO_2 / HCl$

B. Benzene sulphonyl chloride

C. RCOCl/pyridine

D. Carbyl amine reaction

Answer: A::B::D

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14. Identify the correct statement.

A. Hoffmann elimination is syn elimination

B. Sulphonamides can be used to prepare 2°-amines

C. Benzene diazonium ion does not couple with all aromatic rings

D. Hoffmann rearrangements is limited to amide of the type $RCONH_2$

Answer: B::C::D

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15. Aromatic diazonium group can be replaced by various groups. Identify the correct reagent and group

A. H_3PO_2, H

B. boiling with water. OH

C. KI,I

D. CuI/HI,I

Answer: A::B::C

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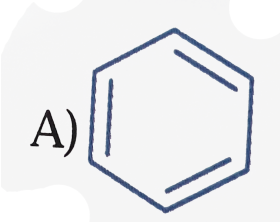
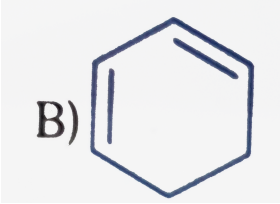
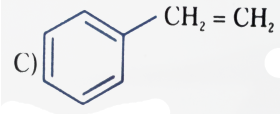
16. An optically active compound with molecular formula $C_6H_{11}N$ dissolves in dilute aqueous HCl and releases N_2 on treatment with HNO_2. The compound on Hofmann eliminatioon gives

A. 

B. 

C. 

D. no reaction

Answer: B

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17. Ethyl amine reacts with NOCl in polar aprotic solvent to form

A. ethyl chloride

B. Ethylnitrate

C. Ethyl alcohol

D. Nitro ethane

Answer: A

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comprehension type q.

1. Amines are less reactive in substitution reactions. Their reactivity is much lesser than alcohols and alkylflourides towards substitution. Protonation of the amino group makes it a better leaving group, but not nearly as good a leaving group as a protonated alcohol. Protonated amino groups cannot be displaced by OH^- because it would react immediately with the acidic hydrogen which would convert it in to a poor nucleophile. The leaving group in quarternary ammonium ion has about the same leaving tendency as a protonated amino group but does not have acidic hydrogen. the reaction of a quarternary ammonium ion with hydroxide ion is known as Hoffmann elimination reaction. The leaving group is tertiary amine. Since a tertiary amine is only a moderately good leaving group, the reaction requires heat. The carbon to hwich the tertiary amine is attached is designated as α carbon. When the hydroxide ion starts to remove a β H form from a quarternary ammonium ion, the leaving group does not immediately start to leave because a tertiary amine is not a good leaving group. As a

result, a partial negative charge bulds up on the carbon from which the proton is removed.

Which of the following statements is correct?

A. PK_a value of protonated amine is more than that of protonated alcohol

B. PK_a valued of the protoned amine is less than that of protonated alcohol

C. PK_a value of protonated amine is equals to that of protonated alcohol

D. PK_a value of amine is less than that of alcohol

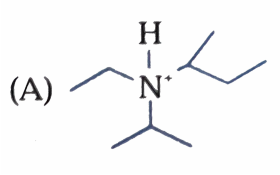
Answer: A

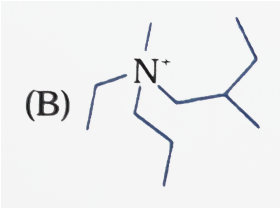
View Text Solution

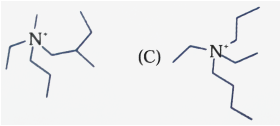
2. Amines are less reactive in substitution reactions. Their reactivity is much lesser than alcohols and alkylflourides towards substitution. Protonation of the amino group makes it a better leaving group, but not nearly as good a leaving group as a protonated alcohol. Protonated amino groups cannot be displaced by OH^- because it would react immediately with the acidic hydrogen which would convert it in to a poor nucleophile. The leaving group in quarternary ammonium ion has about the same leaving tendency as a protonated amino group but does not have acidic hydrogen. the reaction of a quarternary ammonium ion with hydroxide ion is known as Hoffmann elimination reaction. The leaving group is tertiary amine. Since a tertiary amine is only a moderately good leaving group, the reaction requires heat. The carbon to hwich the tertiary amine is attached is designated as α carbon. When the hydroxide ion starts to remove a β H form from a quarternary ammonium ion, the leaving group does not immediately start to leave because a tertiary amine is not a good leaving group. As a

result, a partial negative charge bulds up on the carbon from which the proton is removed.

Which of the following compounds when subjected to Hoffmann elimination gives an alkene which can exhibit geometrical isomerism?

A. 

B. 

C. 

D. None

Answer: D

View Text Solution

3. Amines are less reactive in substitution reactions. Their reactivity is much lesser than alcohols and alkylflourides towards substitution. Protonation of the amino group makes it a better leaving group, but not nearly as good a leaving group as a protonated alcohol. Protonated amino groups cannot be displaced by OH^- because it would react immediately with the acidic hydrogen which would convert it in to a poor nucleophile. The leaving group in quarternary ammonium ion has about the same leaving tendency as a protonated amino group but does not have acidic hydrogen. the reaction of a quarternary ammonium ion with hydroxide ion is known as Hoffmann elimination reaction. The leaving group is tertiary amine. Since a tertiary amine is only a moderately good leaving group, the reaction requires heat. The carbon to hwich the tertiary amine is attached is designated as α carbon. When the hydroxide ion starts to remove a β H form from a quarternary ammonium ion, the leaving group does not immediately start to leave because a tertiary amine is not a good leaving group. As a

result, a partial negative charge bulds up on the carbon from which the proton is removed.

Which of the following statements are true regarding Hoffmann elimination?

A. It follows anti-zaitsev elimination

B. it form only zaitsev product

C. no polar compounds are formed at the end of the reaction

D. it is given by only 1° amines

Answer: A

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4. Amines are less reactive in substitution reactions. Their reactivity is much lesser than alcohols and alkylflourides towards substitution. Protonation of the amino group makes it a better leaving group, but not nearly as good a leaving group as a protonated alcohol.

Protonated amino groups cannot be displaced by OH^- because it would react immediately with the acidic hydrogen which would convert it in to a poor nucleophile. The leaving group in quarternary ammonium ion has about the same leaving tendency as a protonated amino group but does not have acidic hydrogen. the reaction of a quarternary ammonium ion with hydroxide ion is known as Hoffmann elimination reaction. The leaving group is tertiary amine. Since a tertiary amine is only a moderately good leaving group, the reaction requires heat. The carbon to hwich the tertiary amine is attached is designated as α carbon. When the hydroxide ion starts to remove a β H form from a quarternary ammonium ion, the leaving group does not immediately start to leave because a tertiary amine is not a good leaving group. As a result, a partial negative charge bulds up on the carbon from which the proton is removed.

The compound 'C' in question number 31 on heating with moist silver oxide gives

A. Propene

B. 1-Butene

C. Ehtylene

D. 2-Butene

Answer: C

View Text Solution

5. Amines are less reactive in substitution reactions. Their reactivity is much lesser than alcohols and alkylflourides towards substitution. Protonation of the amino group makes it a better leaving group, but not nearly as good a leaving group as a protonated alcohol. Protonated amino groups cannot be displaced by OH^- because it would react immediately with the acidic hydrogen which would convert it in to a poor nucleophile. The leaving group in quarternary ammonium ion has about the same leaving tendency as a

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Which compounds of question number 31 are optically active

A. A and B

B. B and C

C. A,B and C

D. All are inactive

Answer: A

View Text Solution

6. There are some isomeric amines containing only one N atom. Each one of which forms a chloride salt on treatment with HCl containing $32.42\ \%$ chlorine. None of them decolorizes Br_2 water.

How many of them can evolve N_2 on reaction with HNO_2?

A. 2

B. 3

C. 4

D. 5

Answer: C

View Text Solution

7. There are some isomeric amines containing only one N atom. Each one of which forms a chloride salt on treatment with HCl containing $32.42\ \%$ chlorine. None of them decolorizes Br_2 water.

How many of them contains chiral carbon?

A. 1

B. 2

C. 3

D. 4

Answer: A

View Text Solution

8. There are some isomeric amines containing only one N atom. Each one of which forms a chloride salt on treatment with HCl containing

$32.42\ \%$ chlorine. None of them decolorizes Br_2 water.

How many of them does not give carbyl amine test?

A. 2

B. 3

C. 4

D. 5

Answer: C

View Text Solution

9. The isomeric compounds 'A' and 'B' with molecular formula C_7H_9N give the following reactions. When B is acetylated and then brominated, it gave one monobromo derivative. 'A' when treated with $NaNO_2$ and HCl gave the compound 'C'. 'C' was heated with acetic acid in the presence of conc. H_2SO_4, a pleasant smelling liquid (D) was obtained. 'B' was treated with $NaNO_2$ and HCl in cold condition

and treated with β-Naphthol in NaOH to give an orange red dye.

'B' is

A. Benzylamine

B. p-toluidine

C. o-toluidine

D. m-toluidine

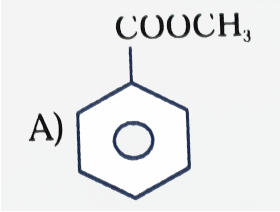
Answer: B

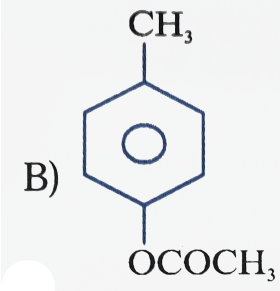
View Text Solution

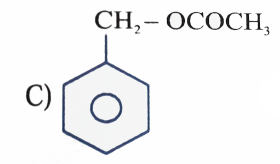
10. The isomeric compounds 'A' and 'B' with molecular formula C_7H_9N give the following reactions. When B is acetylated and then brominated, it gave one monobromo derivative. 'A' when treated with $NaNO_2$ and HCl gave the compound 'C'. 'C' was heated with acetic acid in the presence of conc. H_2SO_4, a pleasant smelling liquid (D) was obtained. 'B' was treated with $NaNO_2$ and HCl in cold condition

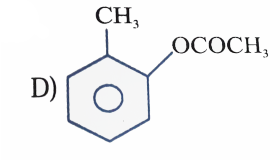
and treated with β-Naphthol in NaOH to give an orange red dye.

'D' is

A. 

B. 

C. 

D. 

Answer: C

View Text Solution

11. The isomeric compounds 'A' and 'B' with molecular formula C_7H_9N give the following reactions. When B is acetylated and then brominated, it gave one monobromo derivative. 'A' when treated with $NaNO_2$ and HCl gave the compound 'C'. 'C' was heated with acetic acid in the presence of conc. H_2SO_4, a pleasant smelling liquid (D) was obtained. 'B' was treated with $NaNO_2$ and HCl in cold condition and treated with β-Naphthol in NaOH to give an orange red dye.

'A' is

A. o-toluidine

B. N-Methylaniline

C. p-toluidine

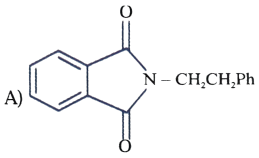
D. Benzylamine

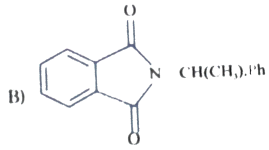
Answer: D

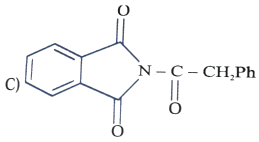
View Text Solution

12. An organic compound 'A' $(C_{16}H_{13}O_2N)$ is insoluble in dil cold aqueous alkali but on warming gives a clear solution. 'A' when treated with dil H_2SO_4 gives $B(C_{16}H_{15}O_2N)$ which when boiled with conc. HCl under reflux and cooled, a solid compound $C(C_8H_6O_4)$ is crystallized out. The mother liquor when separated and concentrated gives $D(C_8H_{12}NCl)$

Structure of compound 'A' can be

A. 

B. 

C. 

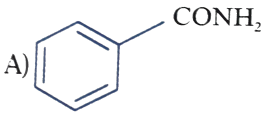
D. Both (A) and (B)

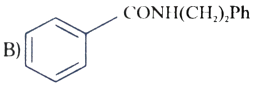
Answer: D

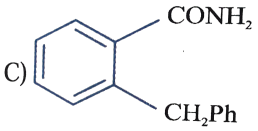
View Text Solution

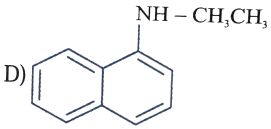
13. An organic compound 'A' $(C_{16}H_{13}O_2N)$ is insoluble in dil cold aqueous alkali but on warming gives a clear solution. 'A' when treated with dil H_2SO_4 gives $B(C_{16}H_{15}O_2N)$ which when boiled with conc. HCl under reflux and cooled, a solid compound $C(C_8H_6O_4)$ is crystallized out. The mother liquor when separated and concentrated gives $D(C_8H_{12}NCl)$

$B \xrightarrow[\Delta]{\text{Soda Lime}} 'M'$, product (M) is

A. 

B. 

C. 

D. 

Answer: B

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14. An organic compound 'A' $(C_{16}H_{13}O_2N)$ is insoluble in dil cold aqueous alkali but on warming gives a clear solution. 'A' when treated with dil H_2SO_4 gives $B(C_{16}H_{15}O_2N)$ which when boiled with conc. HCl under reflux and cooled, a solid compound $C(C_8H_6O_4)$ is crystallized out. The mother liquor when separated and concentrated gives $D(C_8H_{12}NCl)$

Compound 'D' can be

A. $Ph(CH_2)_2NH_3^+Cl^-$

B. $PhCH(CH_3)NH_3^+Cl^-$

C. $Ph.\ NH^+(CH_3)_2Cl^-$

D. Both (A) and (B)

Answer: D

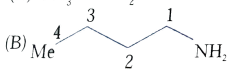
View Text Solution

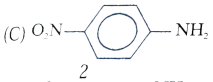
Matrix

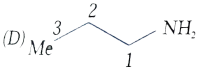
1. Match the following with their appropriate method of preparation

List – I

(A) $Me_3C - NH_2$

(B) 

(C) 

(D) 

List – II

(p) Gabriel phthalimide

(q) Via Ritter reaction

(r) Hofmann bromamide reaction of butanamide

(s) Reduction of butanamide with LAH

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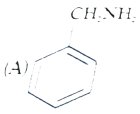
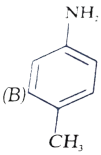
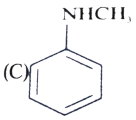
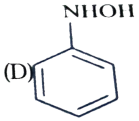
2. Match the following

(A) 

(B) 

(C) 

(D) 

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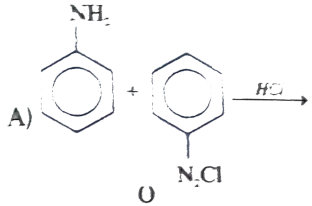
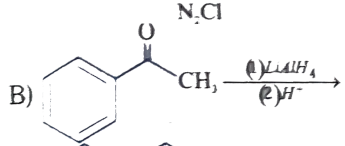
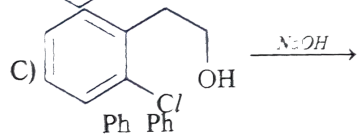
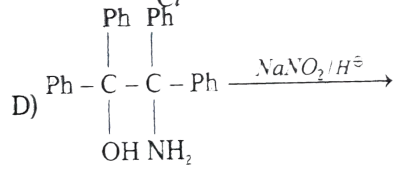
3. Match the reactions in Column I with appropriate option in Column II.

Column I

A) 

B) 

C) 

D) 

Column II

p) Carbocation

q) Racemic mixture

r) Coupling reaction

s) Addition reaction

t) Substitution reaction

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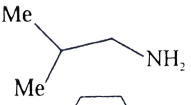
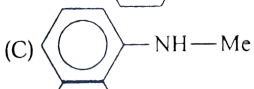
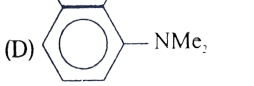
4. Match the following

List – I

(A) 

(B) 

(C) 

(D) 

List – II

(p) Liebermann's nitroso reaction

(q) Evolution of N_2 with HNO_2

(r) Dye test after diazotization

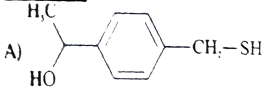
(s) Green colour with HNO_2

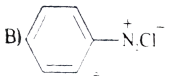
(t) Carylamine test

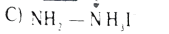
View Text Solution

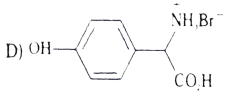
5. Match the following

Column – I

A) 

B) 

C) 

D) 

Column – II

p) gives precipitate with $AgNO_3$

q) gives positive $FeCl_3$ test

r) sodium fusion extract of the compound gives Prussian blue colour with $FeSO_4$

s) sodium fusion extract of the compound gives violet colour with sodium nitroprusside.

View Text Solution

6. Match the following

Column-I (Amines)	Column-II (Characersics)
A) $CH_3CH_2CH_2NH_2$	p) Treatment of $NaNO_2, HCl$ gives nitroso compound
B) $CH_3CH_2NHCH_3$	q) Treatment of $NaNO_2, HCl$ gives diazonium chloride
C) $(CH_3)_3N$	r) Treatment of CH_3I (excess) followed by AgOH, heat gives out alkene
D) $C_6H_5-NH_2$	s) Treaterment with HCl and on heating gives dealkylation.
	t) Treatment of p-toluene sulphonyl chloride produces the compound soluble in alkali

View Text Solution

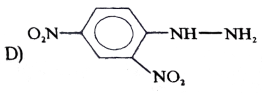
7. Match the following

Column-I

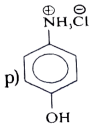
(A) $AgNO_3$ gives preciptate with

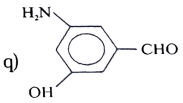
(B) $FeCl_3$ gives precipitate with

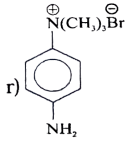
C) Na exact with $FeSO_4$ gives colour with

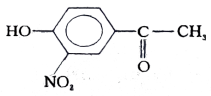
D)  gives precipitate with

Column-II

p) 

q) 

r) 

s) 

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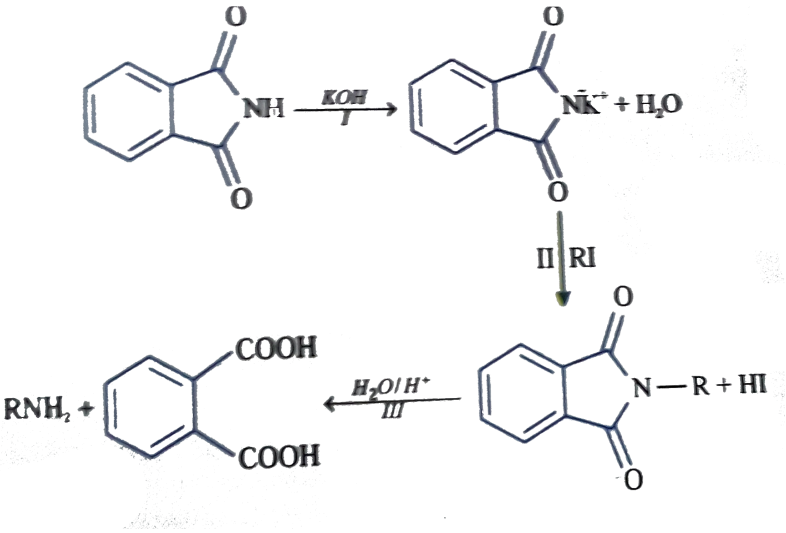
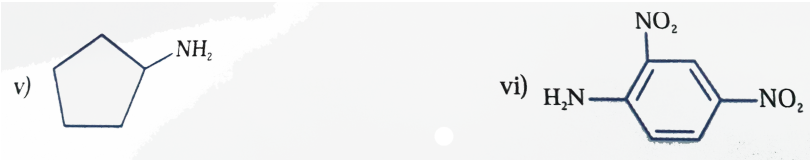
Interger type

1. Gabriel phthalimide reaction can be out lined as follows



How many of the following amines can be prepared by this method



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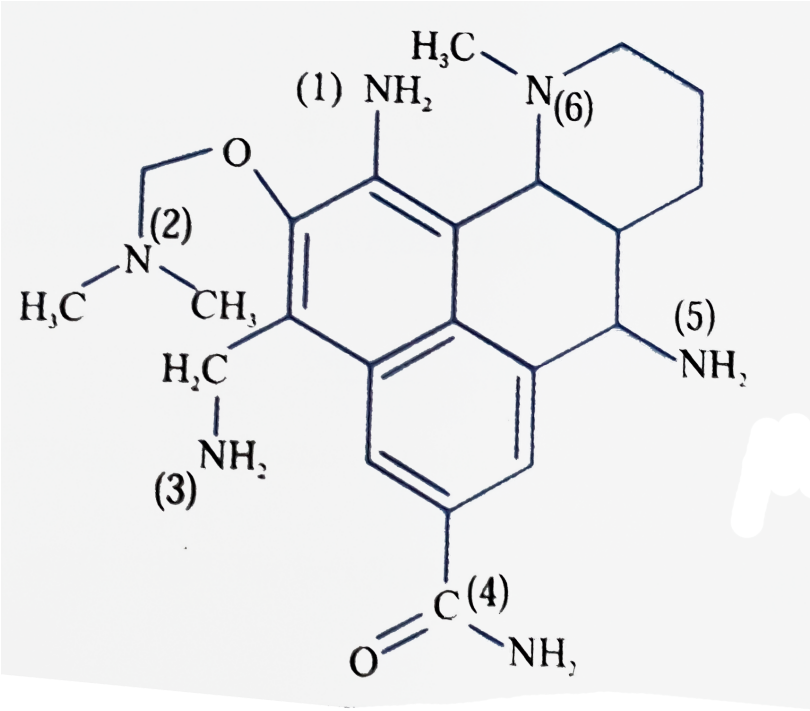

2.

The least basic N in the given molecule is?

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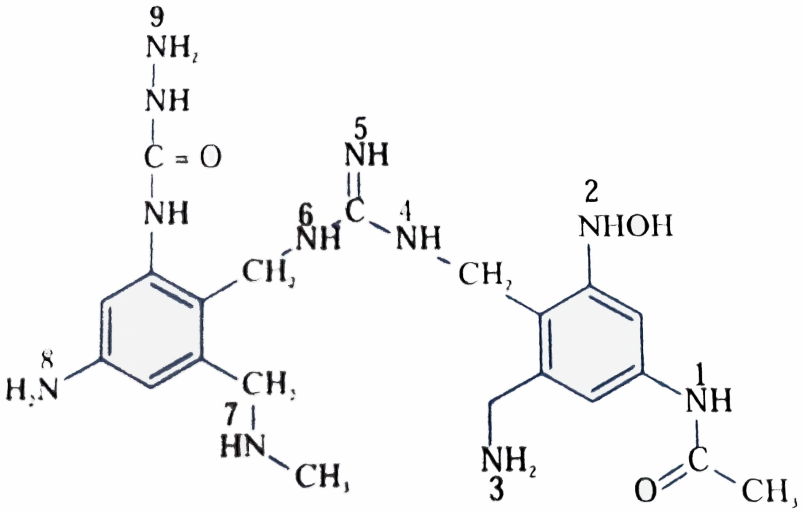

3.

The most basic N in the given molecule is?

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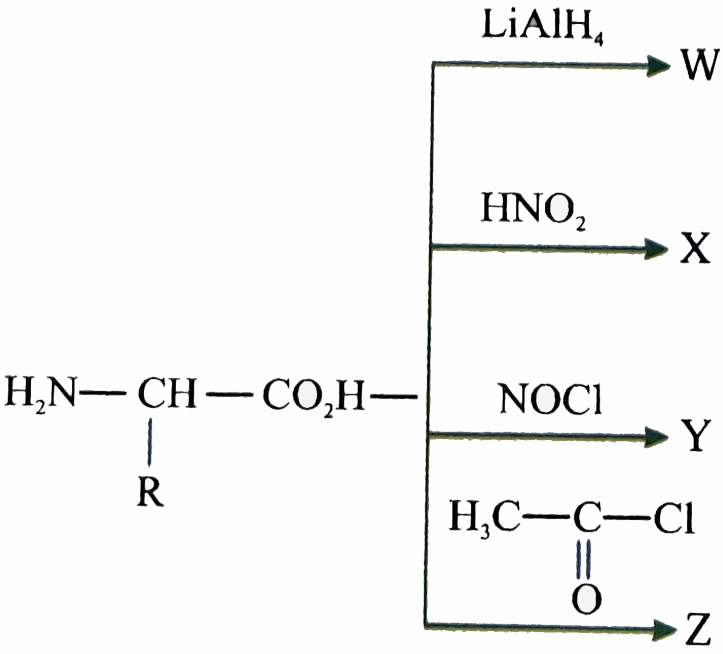
4. Sum of number of N atoms present in all the products of the following reactions is.....



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Subjective type Q.

1. Arrange the following in increasing order of basic strength: methyl amine ,dimethylamine, aniline, N- methylaniline.

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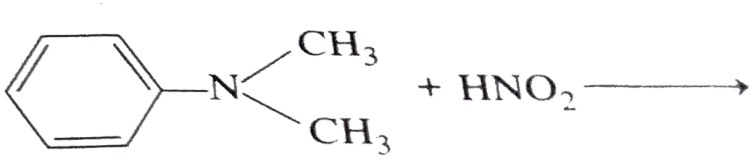
2. Write the structure of the major organic product expected from the following reaction.



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3. How will you bring about the following conversion ? "4-nitro aniline to 1,2,3-tribromo benzene"

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4. Outline a synthesis of p-bromonitrobenzene from benzene in two steps .

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5. Compound A (C_3H_9N) reacts with benzene sulphonyl chloride to form a solid insoluble in alkali. The structure of compound A is

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6. Complete the following with approprate structure 2,4 -dinitro aniline $\xrightarrow[2\,.\,\text{anisol}]{1\,.\,NaNO_2\text{and}HCl\text{at}25^\circ C} A$

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7. Write the structure of the foul-smelling compound obtained when aniline is treated with chloroform in the presence of KOH.

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8. Give reasons for the following in one or two sentences: "Dimethyl amine is a stronger base than trimethyl amine" in H_2O.

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9. How would you bring about the following conversion (in three steps) ?

Aniline $\rightarrow$ Benzylamine .

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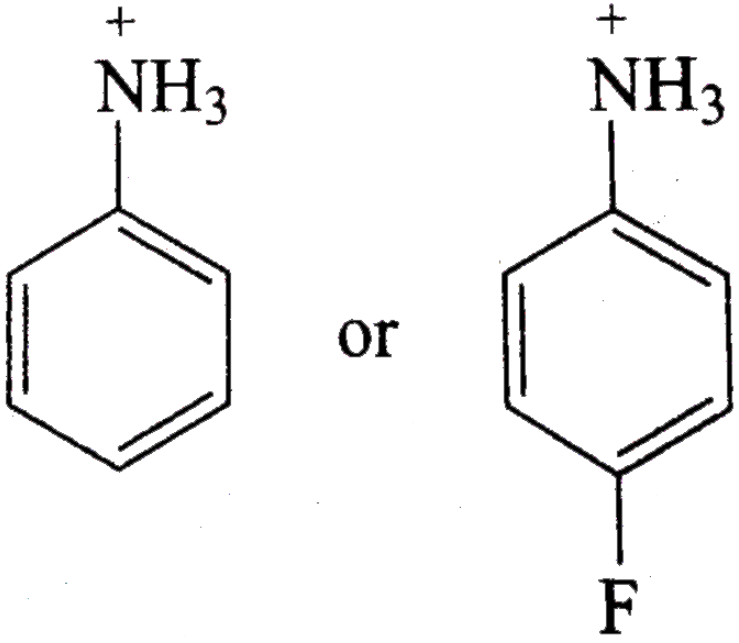
10. Which of the following is more acidic and why?



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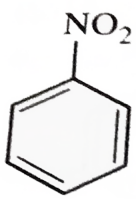
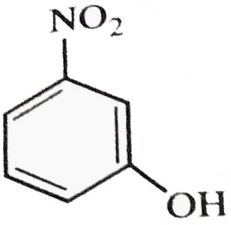
Convert



to



11. Convert

in not more than four steps. Also mention the reaction conditions

and temperature.

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12. $\underset{\text{Optically active}}{\underset{(X)}{C_5CH_{13}N}} \xrightarrow[N_2]{NaNO_2/HCl} (Y)\text{Tertiary alcohol} + \text{Other product}$

Find (X) and (Y) . Is (Y) optically active ? Write the intermediate steps .

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13. A mixture of two aromatic compounds (A) and (B) separated by dissolving it in chloroform followed by extraction with aqueous KOH solution. The organic layer containing compound (A) when heated with alcoholic solution of KOH produced a compound (C) (C_7H_5N) associated with an unpleasant odour . The alkaline aqueous layer on the other hand , when heated with chloroform and then acidified gave a mixture of two isometic compounds (D) and (E)

of molecular formula $C_7H_6O_2$. Identity the compounds (A), (B) . (C) (D), and (E) and write their structures .

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