



CHEMISTRY

BOOKS - FULL MARKS CHEMISTRY (TAMIL ENGLISH)

ORGANIC NITROGEN COMPOUNDS

Textbook Evaluation Choose The Correct Answer

1. The method by which aniline cannot be prepared is

A. degradation of benzamide with $Br_2 / NaOH$

B. potassium salt of phthalimide treated with chlorobenzene followed by hydrolysis with aqueous NaOH solution.

C. Hydrolysis of phenylcyanide with acidic solution

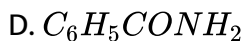
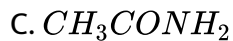
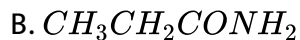
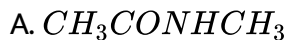
D. reduction of nitrobenzene by Sn/HCl

Answer: B



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2. Which one of the following will not undergo Hofmann bromamide reaction?



Answer: A



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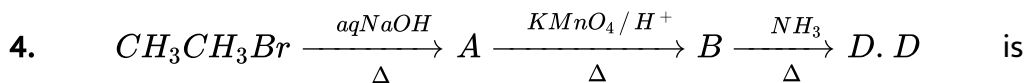
3. Assertion: Acetamide on reaction with KOH and bromine gives acetic acid.

Reason: Bromine catalyses hydrolysis of acetamide.

- A. if both assertion and reason are true and reason is the correct explanation of assertion.
- B. if both assertion and reason are true but reason is not the correct explanation of assertion.
- C. assertion is true but reason is false
- D. both assertion and reason are false

Answer: D

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.....

- A. bromomethane
- B. α - bromo sodium acetate

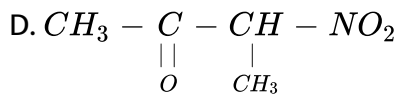
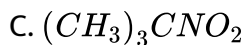
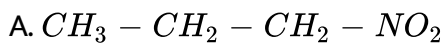
C. methanamine

D. acetamide

Answer: C

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5. Which one of the following nitro compounds does not react with nitrous acid?



Answer: C

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6. Aniline + benzoylchloride $\xrightarrow{NaOH} C_6H_5 - NH - COC_6H_5$ this reaction is known as.....

- A. Friedel-crafts reaction
- B. HVZ reaction
- C. Schotten-Bauman reaction
- D. none of these

Answer: C

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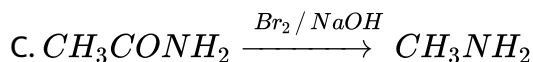
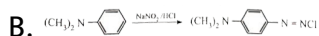
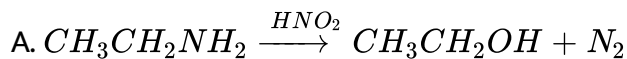
7. The product formed by the reaction an aldehyde with a primary amine

- A. carboxylic acid
- B. aromatic acid
- C. schiff's base
- D. ketone

Answer: C

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8. Which of the following reaction is not correct.



D. None of these

Answer: B

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9. When aniline reacts with acetic anhydride the product formed is

.....

A. o-aminoacetophenone

B. m-aminoacetophenone

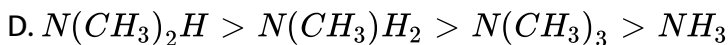
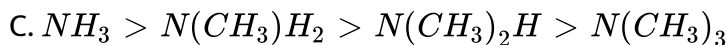
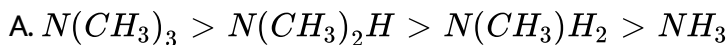
C. p-aminoacetophenone

D. acetanilide

Answer: D

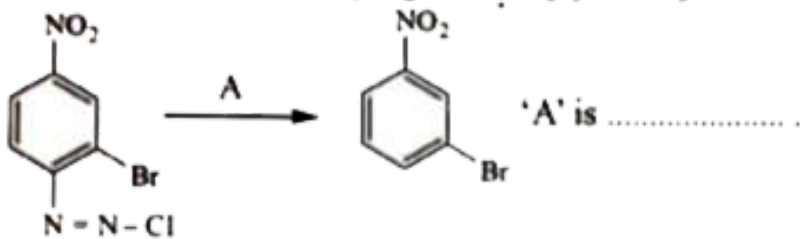
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10. The order of basic strength for methyl substituted amines in aqueous solution is



Answer: D

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11.

A. H_3PO_2 and H_2O

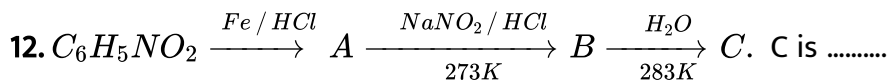
B. $\text{H}^+ / \text{H}_2\text{O}$

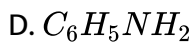
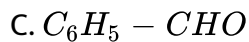
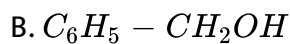
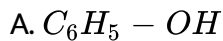
C. $\text{HgSO}_4 / \text{H}_2\text{SO}_4$

D. Cu_2Cl_2

Answer: A

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Answer: A

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13. Nitrobenzene on reaction with at $80 - 100^\circ C$ form which one of the following products?

A. 1,4-dinitrobenzene

B. 2,4,5-trinitrobenzene

C. 1,2-dinitrobenzene

D. 1,3-dinitrobenzene

Answer: D

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

- A. pentan-1-amine
- B. pentan-2-amine
- C. N,N-dimethylpropan -2-amine
- D. N-methylbutan-2-amine

Answer: D

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15. Secondary nitro alkanes react with nitrous acid to form.....

- A. red solution
- B. blue solution

C. green solution

D. yellow solution

Answer: B

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16. Which of the following amines does not undergo acetylation?

A. t-butylamine

B. ethylamine

C. diethylamine

D. triethylamine

Answer: D

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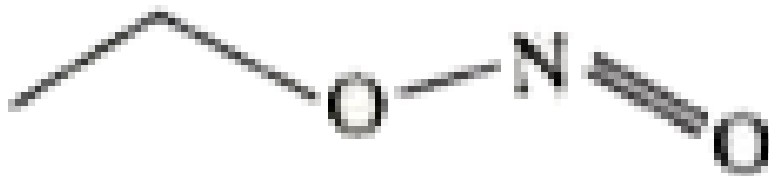
17. Which one of the following is most basic?

- A. 2,4-dichloroaniline
- B. 2,4-dimethyl aniline
- C. 2,4-dinitroaniline
- D. 2,4-dibromoaniline

Answer: B

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18. When



is reduced

with Sn/HCl the pair of compounds formed are.....

- A. Ethanol, hydrozylamine hydrochloride

B. Ethanol, ammonium hydroxide

C. Ethanol NH_2OH

D. $C_3H_5NH_2$, H_2O

Answer: A

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19. IUPAC name for the amine $CH_3 - \underset{\underset{CH_3}{|}}{N} - \overset{\overset{CH_3}{|}}{\underset{\underset{C_2H_5}{|}}{C}} - CH_2 - CH_3$ is

A. 3-Bimethylamino-3-methyl pentane

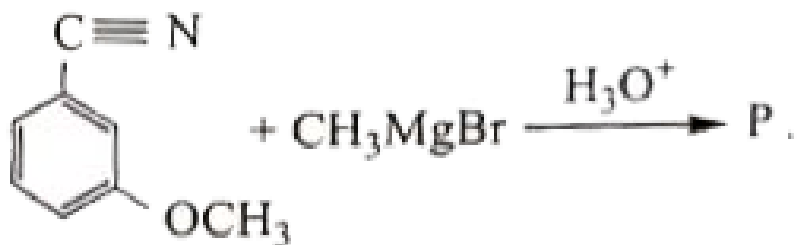
B. 3-(N,N-Triethyl)-3-amino pentane

C. 3-N,N-trimethyl pentanamine

D. 3-(N,N-Dimethyl amino)-3-methylpentane

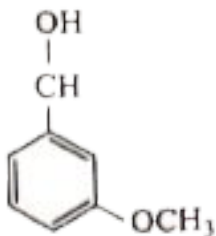
Answer: D

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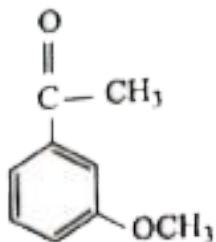


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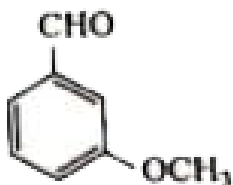
+ $\text{CH}_3\text{MgBr} \xrightarrow{\text{H}_3\text{O}^+}$ P. Product P in the above reaction is



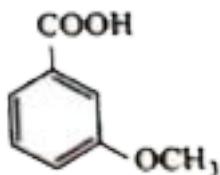
A.



B.



C.



D.

Answer: B

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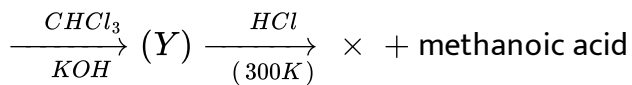
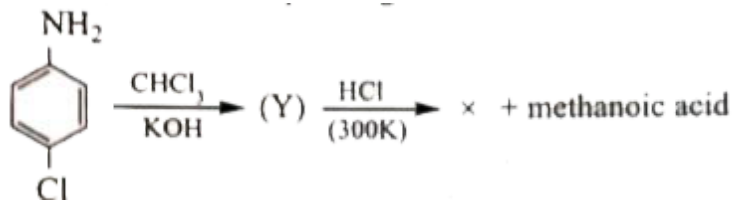
21. Ammonium salt of benzoic acid is heated strongly and the product so formed is reduced and then treated with $NaNO_2/HCl$ at low temperature. The final compound formed is

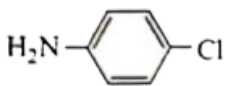
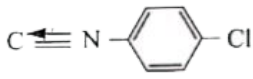
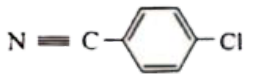
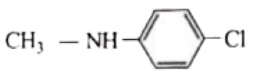
- A. Benzene diazonium chloride
- B. Benzyl alcohol
- C. Phenol
- D. Nitrosobenzene

Answer: B

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22. Identify X in the sequence give below.

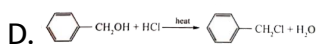
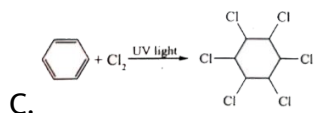
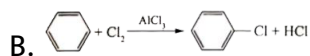
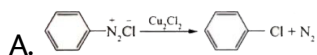


- A. 
- B. 
- C. 
- D. 

Answer: A

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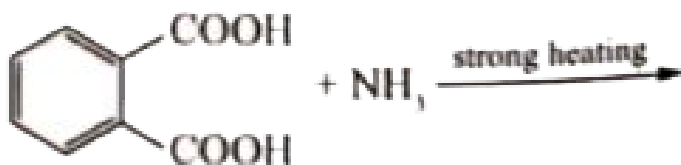
23. Among the following the reaction that proceeds through an electrophilic substitution is

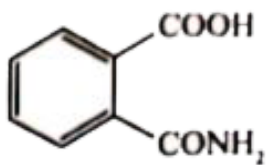


Answer: B

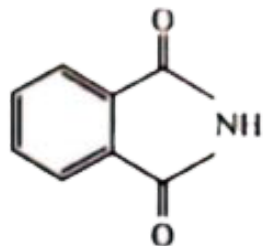
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24. The major product of the following reaction

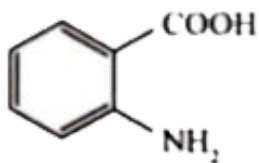




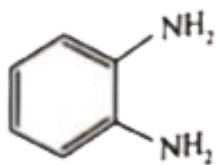
A.



B.



C.



D.

Answer: B



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1. Write down the possible isomers of the $C_4H_9NO_2$ give their IUPAC names.

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2. There are two isomers with the formula CH_3NO_2 . How will you distinguish between them?

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3. What happens when

(i) 2-Nitropropane boiled with HCl

(ii). Nitrobenzene electrolytic reduction in strongly acidic medium.

(iii). Oxidation of tert-butylamine with $KMnO_4$

(iv). Oxidation of acetoneoxime with trifluoroperoxy acetic acid.

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4. How will you convert nitrobenzene into

(i) 1,3,5-trinitrobenzene

(ii) o and p-nitrophenol

(iii) m-nitro aniline

(iv). Azoxybenzene

v. Hydrozobenzene

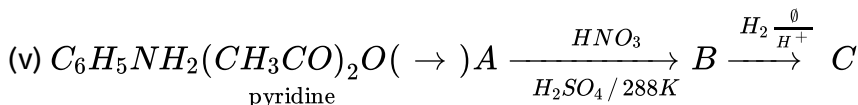
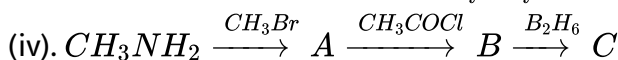
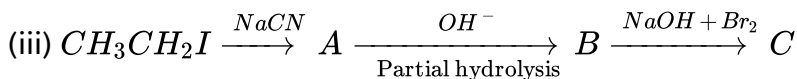
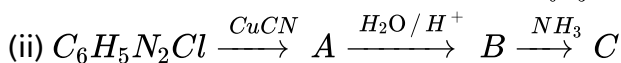
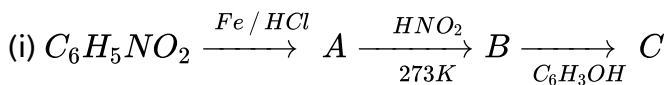
vi. N-phenylhydroxylamine

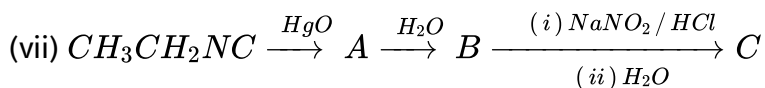
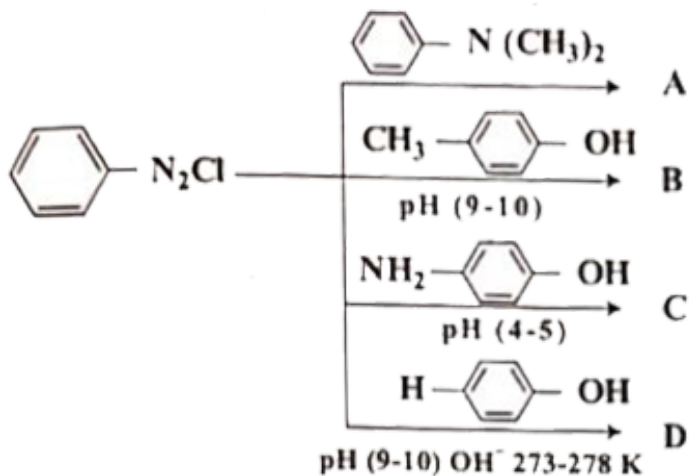
(vii). Aniline.



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5. Identify compounds A,B and C in the following sequence of reactions.





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6. Write short notes on the following

(i) Hoffmann's bromide reaction

(ii) Ammonolysis

(iii) Gabriel phthalimide synthesis

(iv) Schotten-Baumann reaction

v. Carbylamine reaction

vi. Mustard oil reaction

vii. Coupling reaction

viii. Diazotisation

ix. Gomberg reaction.

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7. How will distinguish between primary secondary and tertiary aliphatic amines.

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8. Account for the following:

(i) Aniline does not undergo Friedel-Crafts reaction:

ii. Diazonium salts of aromatic amines are more stable than those of aliphatic amines

iii. pK_b of aniline is more than that of methylamine

iv. Gabriel phthalimide synthesis is preferred for synthesising primary amines.

v. Ethylamine is soluble in water whereas aniline is not

vi. Amines are more basic than amides

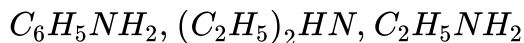
vii. Although amino group is o- and p- directing in aromatic electrophilic substitution reactions, aniline on nitration gives a substantial amount of m-nitroaniline.



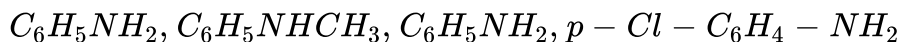
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9. Arrange the following

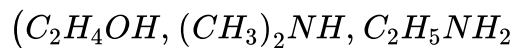
(i) In increasing order of solubility in water



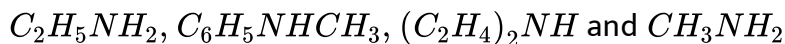
(ii) In increasing order of basic strength (a) aniline, p-toluidine and p-nitroaniline (b)



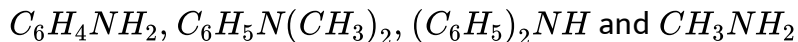
(iii) In decreasing order of basic strength in gas phase



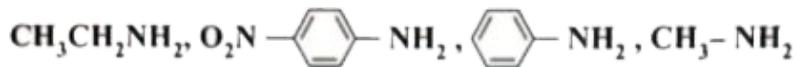
(v) In decreasing order to the pK_b values



(vi) Increasing order of basic strength



(vii) In decreasing order of basic strength



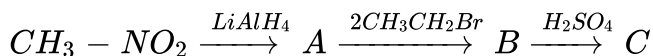
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10. How will you prepare propan -1- amine from

(i) Butane nitrile (ii) Propanamide (iii) 1- nitropropane

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11. Identify A,B,C and D



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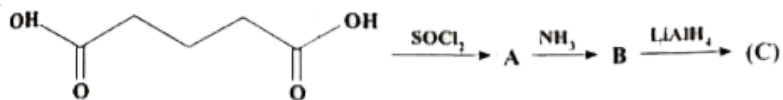
12. How will you convert diethylamine into

(i) N,N-diethylacetamide (ii) N-nitrosodiethylamine

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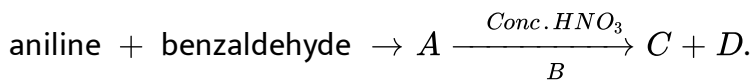
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13. Identify A,B and C



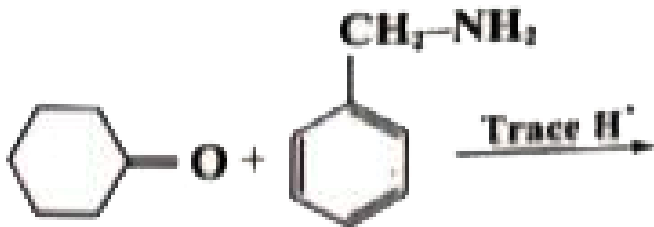
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14. Identify A,B, C and D



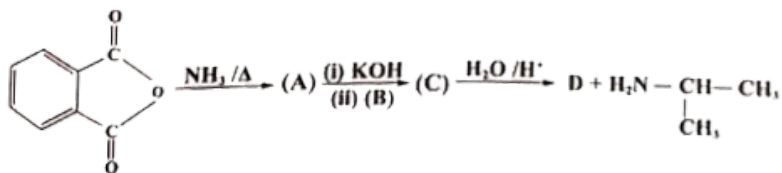
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15. Complete the following reaction



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16. Predict A,B, C and D for the following reaction

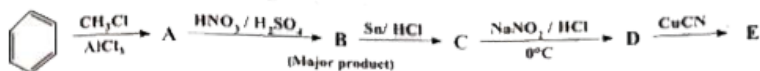


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17. A dibromo derivative (A) on treatment with KCN followed by acid hydrolysis and heating gives a monobasic acid (B), along with liberation of CO_2 . (B) on heating with liquid ammonia followed by treating with Br_2/KOH gives (C) which on treating with NaNO_2 and HCl at low temperature followed by oxidation gives a monobasic acid (D) having molecular mass 74. Identify A to D.

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18. Identify A to E in the following frequency of reactions.



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Evaluate Yourself

1. Write all possible isomers for the following compounds.

(i) $C_2H_5 - NO_2$ (ii) $C_3H_7 - NO_2$

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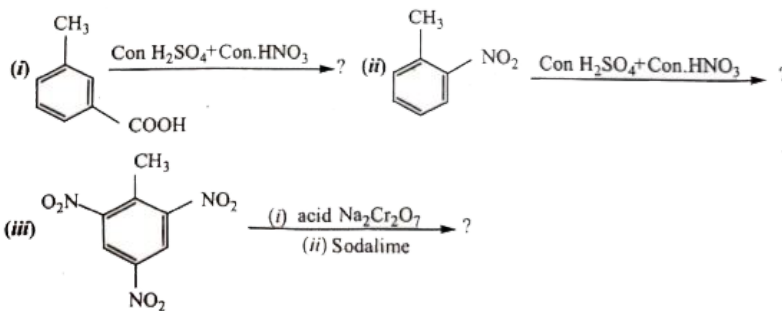
2. Find out the product of the following reactions.

(i) $CH_3CH(Cl)COOH \xrightarrow{(i) NaNO_2} ?$ [X] (i)

$CH_3CH_2 - Br + NaNO_2 \xrightarrow{\text{alcohol} / \Delta} [Y]$

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3. Predict the major product that would be obtained on nitration of the following compounds.



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4. Draw the structure of the following compounds

i. Neopentylamine

ii. Tert-butylamine

α - amino propionaldehyde

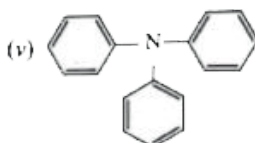
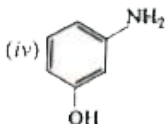
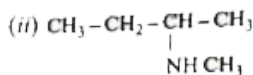
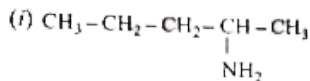
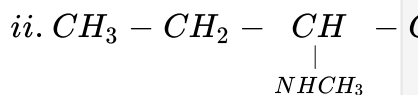
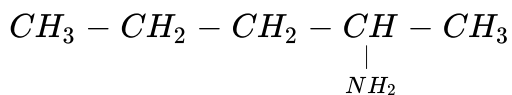
iv. Tribenzylamine

v. N-ethyl -N-methylhexan-3-amine

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5. Give the correct IUPAC names for the following amines.

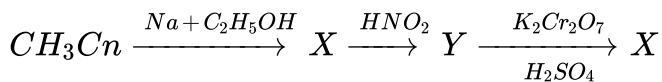
i.



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Additional Questions Choose The Correct Answer

1. Identify the product Z in the series of the reaction.....



A. CH_3CHO

B. CH_3CONH_2

C. CH_3COOH



Answer:

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Additional Questions Fill In The Blanks

1. Is an organic compound needed to maintain the health of nerves, skin and red blood cells.

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2. Plants synthesise and to protect them from being eaten away by insects and other animals.

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3. Compounds are the important constituents of explosives, drugs, dyes, fuels, polymers, synthetic rubbers.

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4. Dopamine act as

 [View Text Solution](#)

5. Dilates blood vessels.

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6. Tertiary nitro alkanes do not exhibit..... Due to the absence of α - H atom.

 [View Text Solution](#)

7. Aci form of nitro alkanes gives colour with ferric chloride.

 [View Text Solution](#)

8. Aci form of nitro alkanes are otherwise called..... Or

 [View Text Solution](#)

9. Laboratory preparation of Nitro ethane from ethyl bromide follows..... Mechanism.

 [View Text Solution](#)

10. Except other alkanes give a mixture of nitro alkanes due to C-C cleavage by nitration of alkanes.

 [View Text Solution](#)

11. Oxidation of acetaldoxime with Gives 1-nitro ethane.

 [View Text Solution](#)

12. Is suspected to cause genetic damage and be harmful to the nervous system.

 [View Text Solution](#)

13. Nitro benzene on reduction with $\text{SnCl}_2 + \text{KOH}$ gives.....

 [View Text Solution](#)

14. Nitrobenzene on alkaline medium reduction gives.....

 [View Text Solution](#)

15. Amines posses Geometry.

 [View Text Solution](#)

16. The nitrogen atom in amine is Hybridised.

 [View Text Solution](#)

17. Gabriel phthalimide synthesis is used for the preparation of

 [View Text Solution](#)

18. Ammonolysis of hydroxyl compounds is called reaction.

 [View Text Solution](#)

19. Aniline when exposed to air becomes coloured due to



[View Text Solution](#)

20. Alkyl amines are strong base than.....



[View Text Solution](#)

21. Acylation and benzylation of Aniline are..... Reactions.



[View Text Solution](#)

22. Liberman's nitroso test is used to detect.....



[View Text Solution](#)

23. test is used to identify primary amine.



[View Text Solution](#)

24. Direct nitration of aniline gives O and P-nitro aniline along with Due to oxidation.

 [View Text Solution](#)

25. The conversion of benzene diazonium chloride to benzene by H_3PO_2 proceeds through Mechanism.

 [View Text Solution](#)

26. Benzene diazonium chloride when boiled with water gives.....

 [View Text Solution](#)

27. The conversion of Benzene diazonium chloride to Biphenyl is called Reaction.

 [View Text Solution](#)

28. Coupling reaction generally occurs at Position of Benzene ring.

 [View Text Solution](#)

29. The condensation reaction of esters with nitriles containing α -hydrogen is known as.....

 [View Text Solution](#)

30. Chloropicrin is used as an

 [View Text Solution](#)

31. 4% solution of ethyl nitrite in alcohol is known as.....

 [View Text Solution](#)

32. Sweet spirit of nitre is used as

 [View Text Solution](#)

33.is used to product lubricating oils in motors and machinery.

 [View Text Solution](#)

34.an anti cancer agent used to treat stomach and colon cancer.

 [View Text Solution](#)

35. Mitomycin C contains an Ring.

 [View Text Solution](#)

36.is used as precursor to explosive.

 [View Text Solution](#)

37. An organic nitrogen compoundis used as an insecticide.

 [View Text Solution](#)

38.is known as sweet spirit of nitre.

 [View Text Solution](#)

39. Chloropicrin.....is used as an insecticide.

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Additional Questions Assertion And Reason

1. Assertion (A): Tertiary nitro alkanes do not exhibit tautomerism.

Reason(R):Tertiary nitro alkanes do not have of α - H atom

A. Both A and R are correct and r is explains A

B. Both A and R but R is wrong

C. A is correct but R is wrong

D. A is wrong but R is correct

Answer: A

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2. Assertion(A): Primary and secondary nitroalkanes show an equilibrium mixture of two tautomers namely nitro and aci form

Reason (R):Both primary and secondary nitroalkanes are having α H atoms.

A. Both A and R are correct and r is explains A

B. Both A and R but R is wrong

C. A is correct but R is wrong

D. A is wrong but R is correct

Answer: A

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3. Assertion(A) Nitro alkanes dissolve in NaOH solution of form a salt.

Reason (R):The α - H atom of 1° and 2° nitroalkanes show acidic character because of the electron withdrawing effect of NO_2 group.

A. Both A and R are correct and r is explains A

B. Both A and R but R is wrong

C. A is correct but R is wrong

D. A is wrong but R is correct

Answer: A

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4. Assertion(A): 2-nitro propane is more acidic than nitro methane.

Reason (R): When the number of alkyl group attached to α carbon increases, acidity decreases. Due to +I effect of alkyl groups.

A. Both A and R are correct and R explains A

B. Both A and R but R is wrong

C. A is correct but R is wrong

D. A is wrong but R is correct

Answer: D



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5. Assertion(A): Nitrobenzene cannot be prepared from bromo benzene by action of ethanolic solution of potassium nitrite.

Reason(R): The bromine directly attached to the benzene ring cannot be cleaved easily.

A. Both A and R are correct and r is explains A

B. Both A and R but R is wrong

C. A is correct but R is wrong

D. A is wrong but R is correct

Answer: A

 [View Text Solution](#)

6. Assertion(A): Nitrobenzne undergoes friedel craft reaction.

Reason(R):Nitrobenzene have strong deactivating NO_2 group.

A. Both A and R are correct and r is explains A

B. Both A and R but R is wrong

C. A is correct but R is wrong

D. A is wrong but R is correct

Answer: C

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7. Assertion(A): Amines possess pyramidal geometry.

Reason[®]: Nitrogen atoms of amines are trivalent and have four sp^3 hybridised orbitals. Three sp^3 orbitals overlap with orbitals of hydrogen and four sp^3 orbitals contain a lone pair of electrons.

- A. Both A and R are correct and R explains A
- B. Both A and R but R is wrong
- C. A is correct but R is wrong
- D. A is wrong but R is correct

Answer: A

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8. Assertion (A): The C-N-C bond angle of trimethyl amine is 108° .

Reason(R): The bond of C-N-C is due to the repulsion between the bulky

methyl groups.

A. Both A and R are correct and r is explains A

B. Both A and R but R is wrong

C. A is correct but R is wrong

D. A is wrong but R is correct

Answer: C



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9. Assertion (A): Aniline cannot be prepared by Gabriel phthalimide synthesis.

Reason(R):Arylhalides do not undergo nucleophilic substitution with the anion formed by phthalimide.

A. Both A and R are correct and r is explains A

B. Both A and R but R is wrong

C. A is correct but R is wrong

D. A is wrong but R is correct

Answer: A

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10. Assertion (A): Amines have lower boiling point than alcohols.

Reason (R): Nitrogen has lower electronegative value than oxygen and hence the N-H bond is less polar than -OH bond.

A. Both A and R are correct and R explains A

B. Both A and R but R is wrong

C. A is correct but R is wrong

D. A is wrong but R is correct

Answer: A

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11. Assertion (A): Tertiary methyl amine is less soluble in water than methyl amine.

Reason(R): Solubility decreases due to the increase in size of the hydrophobic alkyl group.

A. Both A and R are correct and R explains A

B. Both A and R but R is wrong

C. A is correct but R is wrong

D. A is wrong but R is correct

Answer: C



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12. Assertion (A): Aniline reacts with acids to form salts and also reacts with electrophiles.

Reason(R): The lone pair of electrons on nitrogen atom in amines makes them basic as well as nucleophilic.

A. Both A and R are correct and r explains A

B. Both A and R but R is wrong

C. A is correct but R is wrong

D. A is wrong but R is correct

Answer: A

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13. Assertion(A): Alkyl amines are stronger base than Ammonia.

Reason(R):When a+I group like alkyl group is attached to nitrogen increases the electron density on the nitrogen which makes the electron pair readily available for protonation.

A. Both A and R are correct and r explains A

B. Both A and R but R is wrong

C. A is correct but R is wrong

D. A is wrong but R is correct

Answer: A



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14. Assertion (A)- 2° amines are more basic.

Reason(R): Due to +I effect, steric effect and hydration effect cause 2° amines are more basic.

A. Both A and R are correct and r is explains A

B. Both A and R but R is wrong

C. A is correct but R is wrong

D. A is wrong but R is correct

Answer: A



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15. Assertion(A) : Aromatic amines are less basic than ammonia.

Reason (R):The lone pair of electrons on nitrogen atom in aniline (aromatic amine) gets delocalised over the benzene ring and less available for protonation.

A. Both A and R are correct and R explains A

B. Both A and R but R is wrong

C. A is correct but R is wrong

D. A is wrong but R is correct

Answer: A



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16. Assertion(A): Electrophilic substitution in aniline takes place at ortho and para positions.

Reason(R):The NH_2 group is a strong activating group and lone pair of

electrons on the nitrogen atom is in conjugation with benzene ring that increases electro density at ortho and para position.

- A. Both A and R are correct and R explains A
- B. Both A and R but R is wrong
- C. A is correct but R is wrong
- D. A is wrong but R is correct

Answer: A

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17. Assertion(A): Acylation of amines gives a mono substituted product whereas alkylation of amines gives polysubstituted product.

Reason(R): Acyl group sterically hindered the approach to further acyl group.

- A. Both A and R are correct and R explains A
- B. Both A and R but R is wrong

C. A is correct but R is wrong

D. A is wrong but R is correct

Answer: C

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18. Assertion(A): Acetanilide is less basic than aniline.

Reason(R): Acetylation of aniline results in the decrease of electron density on nitrogen.

A. Both A and R are correct and r is explains A

B. Both A and R but R is wrong

C. A is correct but R is wrong

D. A is wrong but R is correct

Answer: A

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19. Assertion (A): Aromatic 1° amines can be prepared by Gabriel phthalimide synthesis.

Reason(R): Aryl halides undergo nucleophilic substitution with the anion formed by phthalimide.

A. Both A and R are correct and R explains A

B. Both A and R but R is wrong

C. A is correct but R is wrong

D. A is wrong but R is correct

Answer: B



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20. Assertion (A): Aniline does not undergo Friedel-Crafts reaction.

Reason (R): Aniline donates its lone pair of electrons to the Lewis acid

$AlCl_3$ to form an adduct which inhibits further electrophilic substitution reaction.

- A. Both A and R are correct and r explains A
- B. Both A and R but R is wrong
- C. A is correct but R is wrong
- D. A is wrong but R is correct

Answer: A

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Additional Questions Find The Odd One Out Give The Reasons

1. Find the odd one out give the reasons

Pyridoxine, Dopamine, Histamine, Aspirin.

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2. Find the odd one out give the reasons

Trinitro glycerine, Glyceryl triacetate, Trinitro benzene, Trinitro toluene.

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3. Find the odd one out give the reasons

N-methyl methanamine, N-methyl ethanamine, N-phenyl benzamide, N,N-demethyl methanamine.

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4. Find the odd one out give the reasons

Propan-2-amin, N-ethyl -N-methyl, propan-2-amine, N,N-dimethyl methanamine, N,N-diethyl butan-1-amine.

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5. Find the odd one out give the reasons

P-hydroxy azo benzene, Hydrzzo benzene, P-amino azo benzerne, 2-Phenyl
azo methyl phenol

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6. Find the odd one out give the reasons

Methyl iso cyanide, Methyl cyanide, Acetic anhydrie, Ethyl amine Nitro
ethane

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Additional Questions 2 Mark Questions

1. What is called nitro compound? Give one example.

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2. Define Tautomerism. Give example. Why tertiary nitro alkanes do not exhibit tautomerism?

 [View Text Solution](#)

3. Differentiate between nitro form and acid form of tautomerism of nitro methane.

 [View Text Solution](#)

4. Compare the acid strength of the following compounds (i) Nitro methane (ii) Nitro ethane (iii) 2-nitro propane.

 [View Text Solution](#)

5. Nitro benzene cannot be prepared from Bromo benzene by direct nitration. Give reason.

 [View Text Solution](#)

[View Text Solution](#)

6. How would you convert Acetaldoxime into Nitroethane?

 [View Text Solution](#)

7. How is nitro benzene from benzene?

 [View Text Solution](#)

8. How will you prepare p-dinitrobenzene from p-nitroaniline?

 [View Text Solution](#)

9. How is amino group can be directly converted into nitro group? Explain with an example.

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10. Explain the action of tin and hydrochloric acid with ethyl nitrite.

 [View Text Solution](#)

11. Explain about the acid (or) basic hydrolysis of ethyl nitrite.

 [View Text Solution](#)

12. What is Chloropicrin? How is it prepared? Give its uses.

 [View Text Solution](#)

13. Explain Nef carbonyl synthesis.

 [View Text Solution](#)

14. What happens when nitrobenzene is treated with Ni (or) Pt (or) $LiAlH_4$?

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15. Write a note about structure of Amines.

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16. How would you convert Nitroethane to ethanamine?

 [View Text Solution](#)

17. Explain the action of Pt (or) Sn/HCl with nitrobenzene.

 [View Text Solution](#)

18. Explain mendius reaction.

 [View Text Solution](#)

19. Explain the action of sodium amalgum and ethanol with Methyl Isoeyanide.

 [View Text Solution](#)

20. What happens when sodium azide is treated with methyl bromide?

 [View Text Solution](#)

21. How would you convert chlorobenzene to aniline?

 [View Text Solution](#)

22. Explain Sabatier -Mailhe method.

 [View Text Solution](#)

23. Convert phenol into aniline.

 [View Text Solution](#)

24. Compare the boiling points of 1° , 2° and 3° amines.

 [View Text Solution](#)

25. Aniline is basic in nature. Justify this statement.

 [View Text Solution](#)

26. Alkyl amines are stronger bases than ammonia. Justify this statement.



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27. Explain the action of acetyl chloride with ethyl amine?



[View Text Solution](#)

28. What happens when ethylamine reacts with nitrous acid?



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29. Explain the action of of nitrous acid with N-methyl aniline.



[View Text Solution](#)

30. Explain the action of nitrous acid with trimethyl amine.



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31. What happens when nitrous acid is treated with N,N-dimethyl aniline?

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32. Explain Hoffman mustard oil reaction. (or) Explain the action of CS_2 with aniline.

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33. Explain the action of Br_2 water with aniline.

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34. How would you prepare p-bromo aniline from aniline?

 [View Text Solution](#)

35. How would you prepare p-nitro aniline from aniline?

 [View Text Solution](#)

36. Explain the action of hypophosphorous acid with Benzene diazonium chloride (or) Explain the action of ethanol with benzene diazonium chloride.

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37. Explain Gattermann reaction.

 [View Text Solution](#)

38. How would you get iodo benzene form benzene diazonium chloride.

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39. Explain Bantz- schieman reaction.

 [View Text Solution](#)

40. Convert Benzene diazonium chloride into phenol.

 [View Text Solution](#)

41. Starting form Benzene diazonium chloride, how will you get Nitrobenzene?

 [View Text Solution](#)

42. Convert benzene diazonium chloride to benzoic acid.

 [View Text Solution](#)

43. Explain the action of SnCl_2 and HCl with benzene diazonium chloride.

 [View Text Solution](#)

44. Starting from benzene diazonium chloride how would you get bright orange azo dye?

 [View Text Solution](#)

45. Write the structural formula and IUPAC name of the following compounds

(i) Isobutyl nitrite (ii) Benzo nitrile

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46. Draw the structural formula of

 [View Text Solution](#)

47. How will you get Propane nitrile from ethyl bromide?

 [View Text Solution](#)

48. Starting from methyl magnesium bromide, how would you obtain ethane nitrile?

 [View Text Solution](#)

49. Explain throppe nitrile condensation.

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50. Explain Levine and hauser acetylation.

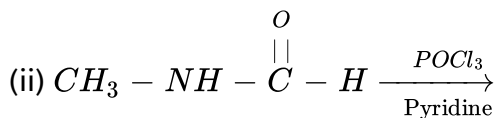
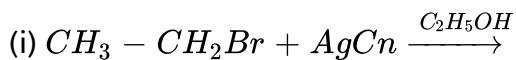
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51. How would you prepare the following compound by carbylamines reaction.

(i) Methyl isocyanide (ii) Phenyl isocyanide

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52. Complete the following reactions



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53. How is methyl isocyanide changed to methyl cyanide?

 [View Text Solution](#)

54. What are the uses of nitrobenzene?

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55. Primary amines have higher boiling points than tertiary amines why?

 [View Text Solution](#)

56. How is m-nitroaniline obtained from nitrobenzene?

 [View Text Solution](#)

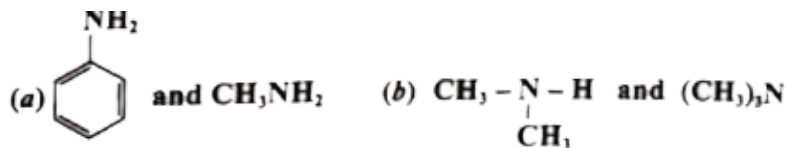
57. How is aniline obtained from benzoic acid?

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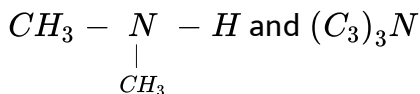
58. How will you convert benzene into aniline?

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59. How will you distinguish between:



(b)



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60. Account for any two of the following:

(a) Amines are basic substances while amides are neutral.

(b) Aromatic amines are weaker bases than aliphatic amines.

 [View Text Solution](#)

61. Assign a reason for the following statements:

Alkylamines are stronger bases than arylamines.

(b) How would you convert methylamine into ethylamine?

 [View Text Solution](#)

62. a. How will you convert an alkyl halide to a primary amine whose molecule has one carbon atom more than the used alkyl halide molecule?

b. Why are amines more basic than the comparable alcohols.

 [View Text Solution](#)

63. Aniline gets coloured on standing in air for a long time. Why?

 [View Text Solution](#)

64. CH_3COONH_2 is a weaker base than $CH_3CH_2NH_2$. Why?

 [View Text Solution](#)

65. Write chemical equation for the following conversions:

a. $CH_3CH_2 - Cl$ into $CH_3CH_2CH_2 - NH_2$

(b) $C_6H_5 - Cl$ into $C_6H_5CH_2CH_2NH_2$



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Additional Questions 3 Mark Questions

1. Write about the classification of organic nitro compounds.



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2. Draw the structural formula of the following compounds.

(i) 2-methyl -1-nitropropane (ii) 2,2-dimethyl-1-nitropropane (iii)

Nitrobenzene



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3. Draw the structural formula of the following compounds

(i) 2-nitro-1-methyl benzene (ii) 1,3,5-trinitrobenzene (iii) 2-phenyl -1-nitroethane

 [View Text Solution](#)

4. Write the possible isomers for the formula $C_4H_9NO_2$

 [View Text Solution](#)

5. How would you prepare nitro ethane from the following compounds?

(i) $CH_3 - CH_2Br$ (ii) $CH_3 - CH_3$

 [View Text Solution](#)

6. Mention any two methods of preparation of nitro methane.

 [View Text Solution](#)

7. Explain the (i) acid medium reduction (ii) Neutral medium reduction of Nitromethane.

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8. What happens when hydrochloric acid is treated with (i) Nitro ethane
(ii) 2-nitropropane (iii) 2-methyl -2-nitro propane ? (or)

How would you distinguish 1° , 2° , 3° nitro compounds?

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9. Explain the following reactions using nitro benzene.

(i) Chlorination (ii) Nitration (iii) Sulphonation

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10. Give the structural formula and IUPAC name of the following compounds.

(i) Isopropyl amine (ii) Allyl amine (iii) Hexamethyl diamine.

 [View Text Solution](#)

11. Draw the structural formula and write the IUPAC name of

(i) Methyl isopropyl amine (ii) Diethyl butyl amine (iii) Ethyl methyl isopropylamine

 [View Text Solution](#)

12. Draw the structural formula and write the IUPAC name of

(i) N,N- dimethyl aniline (ii) Benzyl amine (iii) N-methyl benzylamine

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13. Explain the alkylation reaction of methylamine with equation.

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14. Explain about the sulphonation reaction of aniline.

 [View Text Solution](#)

15. Explain Sandmeyer reaction with example.

 [View Text Solution](#)

16. Write the structural formula and IUPAC name of the following compounds.

(i) Methyl cyanide (ii) Propionitrile (iii) Butyronitrile

 [View Text Solution](#)

17. How would you produce Ethane nitrile from the following compounds?

(i) Acetamide (ii) Ammonium acetate (iii) Acetaldoxime

 [View Text Solution](#)

18. Explain the action of following reagent with ethane nitrile

(i) Dilute mineral acid (ii) Ni / H_2



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19. What happens when methyl isocyanide reacts with the following reagents?

(i) Mineral acid (ii) $Na + C_2H_5OH$



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20. Explain the addition reactions of alkyl isocyanide with (i) halogen (ii) sulphur (iii) ozone.



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21. What are the uses of aliphatic nitro compounds.

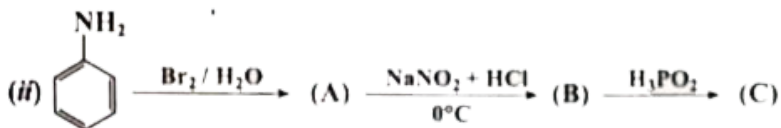
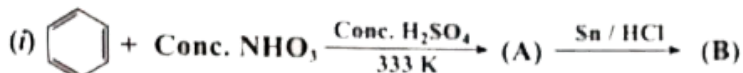


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22. Explain about the structure and uses of Mitomycin.

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23. Complete the following reactions:



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24. Convert methanamine into Ethanamine.

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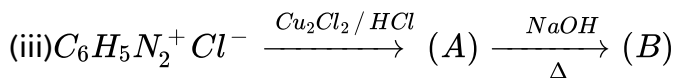
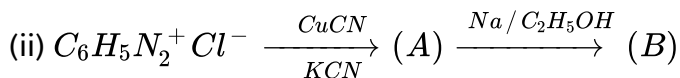
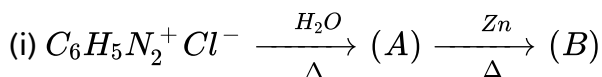
25. Convert Ethanamine into Methanamine.

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26. How would you obtain Benzoic acid from aniline?

 [View Text Solution](#)

27. Complete the following reactions.



 [View Text Solution](#)

28. Write the reactions of (i) aromatic and (ii) aliphatic primary amines with nitrous acid.

 [View Text Solution](#)

29. Give plausible explanation for each of the following:

- (i) Why are amines less acidic than alcohols of comparable molecular masses?
- (ii) why do primary amines have higher boiling point than tertiary amines?
- (iii) Why are aliphatic amines stronger bases than aromatic amines?

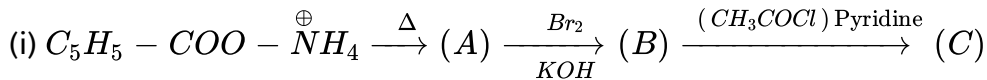
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30. Account for the following:

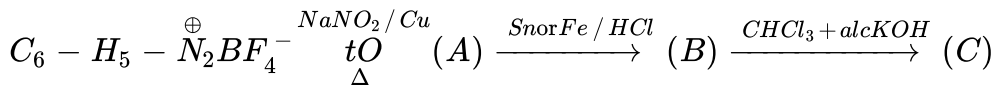
- (i) Primary amines ($R - NH_2$) have higher boiling point than tertiary amines (R_3N).
- (ii) Aniline does not undergo Friedel-Crafts reaction.
- (iii) $(CH_3)_2NH$ is more basic than $(CH_3)_3N$ in an aqueous solution.

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31. Write the structures of A, B and C in the following reactions:



(ii)



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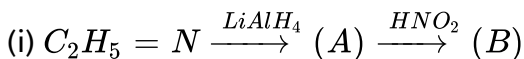
32. Predict, giving reasons the order of basicity of the following compounds:

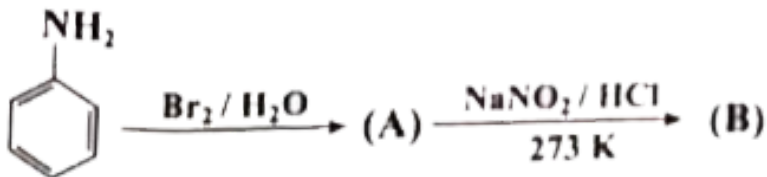
(i) gaseous phase (ii) in aqueous solution.



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33. Identify A and B in the following reactions:





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34. What happens when: (write reactions only)

- (i) Nitroethane is treated with LiAlH_4
- (ii) Diazonium chloride reacts with phenol in basic medium.

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35. How would you achieve the following conversions:

- (i) Nitrobenzene to aniline
- (ii) An alkyl halide to a quaternary ammonium salt.
- (iii) Aniline to benzonitrile.

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36. What happens when (write reactions only).

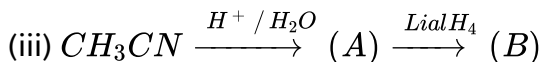
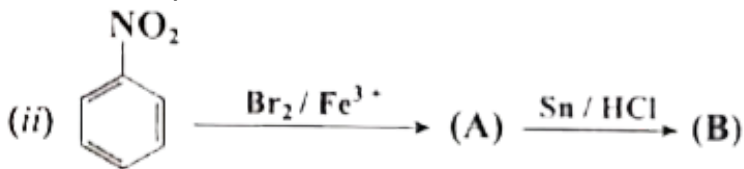
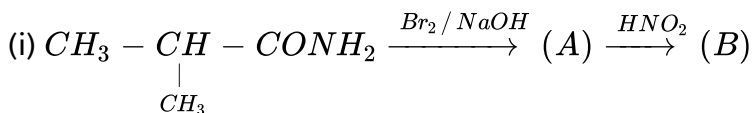
(i) Nitropropane is treated with $LiAlH_4$.

(ii) Ethyl isocyanide undergoes hydrolysis.

(iii) Benzene diazonium chloride reacts with phenol in basic medium.

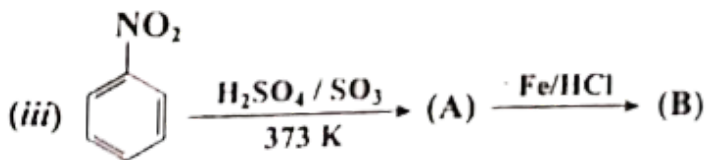
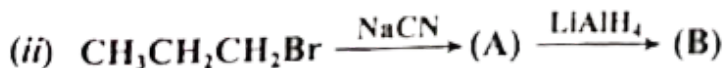
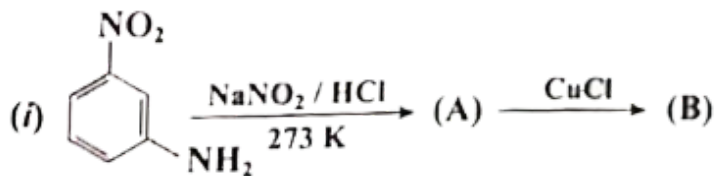
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37. Identify A and B in the following reactions:



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38. Identify A and B in the following reaction:



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39. A compound x having molecular formula C_3H_7NO reacts with Br_2 in the presence of KOH to give another compound y. The compound y reacts with HNO_2 to form ethanol and N_2 gas. Identify the compounds x and y and write the reactions involved.

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40. An organic compound A having molecular formula C_3H_5N on hydrolysis gave another compound B. The compound B on treatment with HNO_2 gave ethyl alcohol. B on warming with $CHCl_3$ and alcoholic caustic potash gave an offensive smelling substance C. Identify A, B and C.

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Additional Questions 5 Mark Questions

1. Explain the various reduction reactions of nitrobenzene:

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2. What happens when nitrous acid react with

- (i) Ethyl amine (ii) Aniline (iii) N-methyl aniline (iv) Trimethyl amine
(v) N,N-dimethyl aniline

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3. Starting from Benzene diazonium chloride, how would you prepare

- (i) Benzen (ii) Phenol (iii) Nitro benzene (iv) Benzoic acid (v) Fluorobenzene

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4. Starting from benzene diazonium chloride, how would you prepare

- (i) Biphenyl (ii) Phenyl hydrazine (iii) p-hydroxy azo benzene (iv) p-amino azo benzene
(v) Chloro benzene

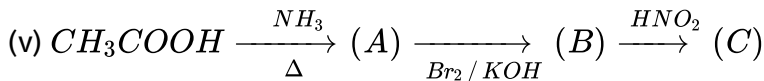
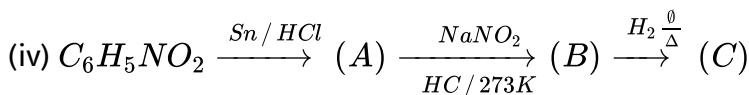
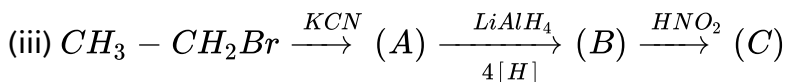
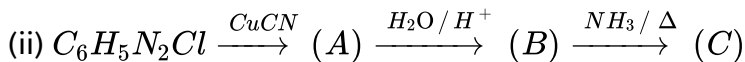
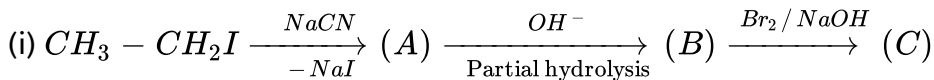
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5. Convert aniline into the following compounds

- (i) N-phenyl benzamide (ii) Phenyl isothiocyanate (iii) 2,4,6- tribromo aniline
(iv) Sulphanilinic acid (v) Phenyl isocyanide.

6. An organic compound (A) of molecular formula C_6H_7N on reaction with sodium nitrite and hydrochloric acid at $0^\circ C$ gives (B) of formula $C_6H_5N_2Cl$ (B) on treatment with cuprous cyanide give (C) of formula C_7H_5N . (C) on reaction with sodium and ethanol gives (D) of formula C_7H_9N . (D) on reaction with nitrous acid gives (E) of molecular formula C_7H_8O . Identify A,B,C,D and E and explain the reactions involved.

7. Complete the following reactions and identify the A,B and C in these reaction.

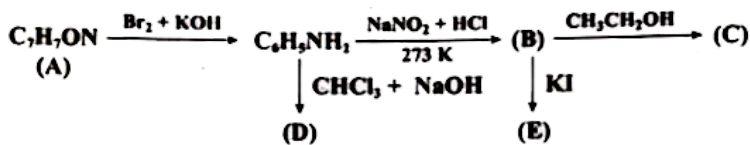


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8. An aromatic compound A on treatment with aqueous ammonia and heating forms compound B which on heating with Br_2 and KOH forms a compound C of molecular formula C_6H^7N . Write the structures and IUPAC names of compound A, B and C

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9. An aromatic compound A of molecular formula C_7H_7ON undergoes a series of reactions as shown below. Write the structure of A, B, C, D and E in the following reactions.



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10. Write reactions and conditions required for the following conversion:

(i) Aniline to benzene (ii) Methylamine to methylcyanide

(iii) Propanenitrile to ethylamine (iv) m-Bromoaniline to m-bromophenol

(v) Nitrobenzene to 2,4,6-tribromoaniline.

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11. A compound A of molecular formula $C_3H_7O_2N$ on reaction with Fe and conc. HCl gives a compound B of molecular formula C_3H_9N .

Compound B on treatment with $NaNO_2$

HCl gives another compound C of molecular formula C_3H_8O . The

compound C has molecular formula C_3H_8O . The compound C gives

effervescence with Na. On oxidation with CrO_3 , the compound C gives a

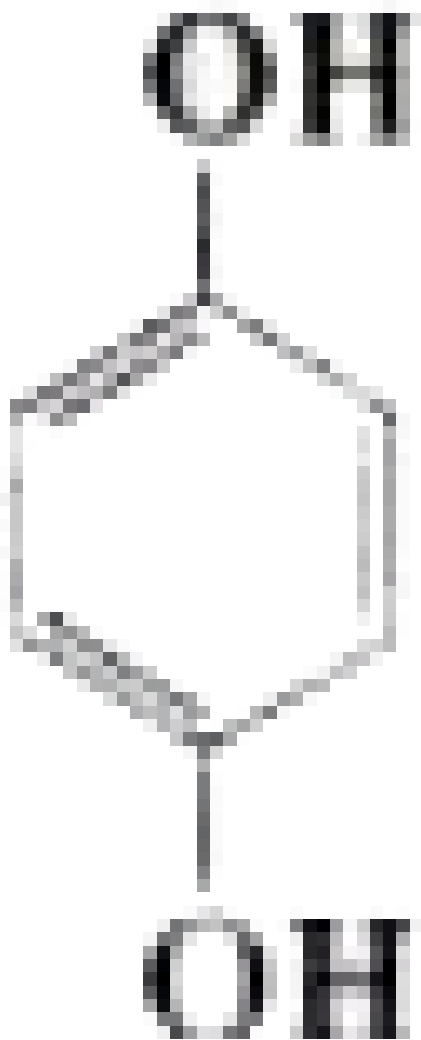
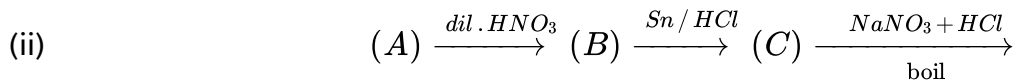
saturated aldehyde containing three carbon atoms.

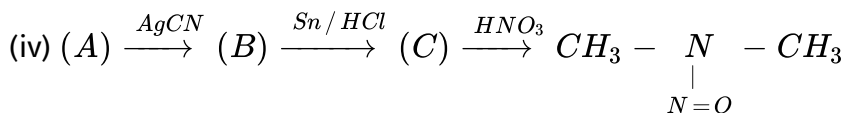
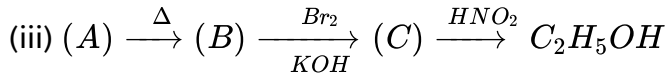
Deduce the structures of A, B and C and write the equations for the

reaction involved.

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12. Identify compounds A,B and C in the following reactions:





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13. A aromatic hydrocarbon (A) of molecular formula C_6H_6 reacts with Conc. HNO_3 and Conc. H_2SO_4 gives (B) of formula $\text{C}_6\text{H}_5\text{O}_2\text{N}$. (B) on reaction with Sn/HCl gives (C) formula $\text{C}_6\text{H}_7\text{N}$ which answers carbylamine reaction. (C) on treatment with chloroform and alkali gives (D) of formula $\text{C}_7\text{H}_5\text{N}$. Identify A,B,C,D and explain the reactions involved.

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14. Convert the following:

(i) Nitro benzene \rightarrow Benzene

(ii) Benzene \rightarrow Benzoic acid

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