



## CHEMISTRY

### BOOKS - MTG WBJEE CHEMISTRY (HINGLISH)

#### ALIPHATIC AMINES

**Wbjee Workout Category 1 Single Option Correct Type 1 Mark**

1. Amines are basic in character because they have

A. a lone pair of electrons on the nitrogen atom

B. a hydroxyl group in the molecule

C. replaceable hydrogen atom

D. tetrahedral structure.

**Answer: A**



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2. The basic character of amines can be explained

A. only in terms of Lowry-Bronsted concept

B. only in terms of Lewis concept

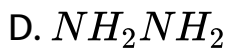
C. both in terms of Arrhenius and Lewis concepts

D. both in terms of Lewis and Lowry-Bronsted concepts.

**Answer: D**

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



**Answer: A**

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4. Increasing order of basic nature of

$NH_3(I)$ ,  $CH_3NH_2(II)$  and  $C_6H_5NH_2(III)$  is

A.  $III < I < II$

B.  $I < II < III$

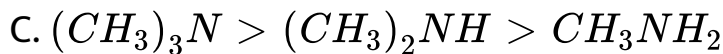
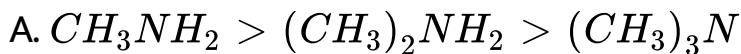
C.  $III < II < I$

D.  $I < III < II$

**Answer: A**

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

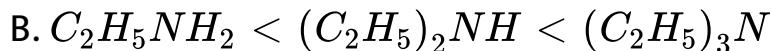
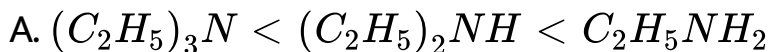


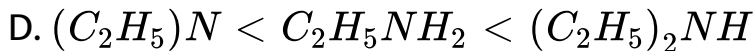
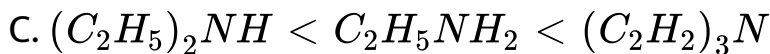
**Answer: D**



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

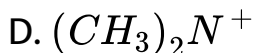
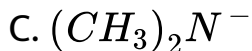
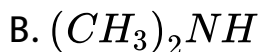
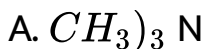




**Answer: B**

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7. The conjugate base of  $(CH_3)_2NH_2^+$  is

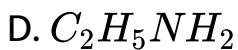
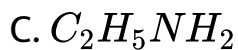
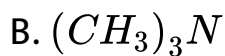
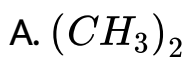


**Answer: B**



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



**Answer: C**



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9. The amine salts commonly used for determination of molecular masses of amines are

A. nitrates

B. sulphates

C. chlorides

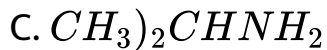
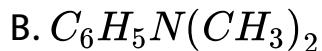
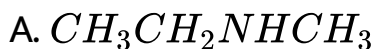
D. chloroplatinates

**Answer: D**

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10. Which one of the following amines gives carbylamine reaction?



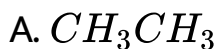


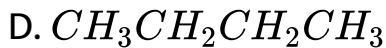
**Answer: C**



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**11.** When ethyl amine is treated with  $CH_3MgBr$ , the product is

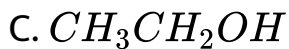
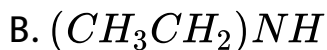




**Answer: B**

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12. Methane is produced when  $CH_3MgBr$  reacts with



D. all of these

**Answer: D**



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13. Primary aliphatic amines can be distinguished from secondary and tertiary amines by heating with

- A. chloroform and alcoholic KOH
- B. chloroform alone
- C. soda-lime
- D. zinc dust.

**Answer: A**



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14. One of the distinguishing reactions of aliphatic and aromatic primary amines is

- A. Carbylamine reaction
- B. reaction with red litmus paper
- C. Hofmann bromamide reaction
- D. Coupling reaction.

**Answer: D**

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15. Primary amines can be distinguished from secondary amines by

- A. Gabriel-phthalimide reaction
- B. Liebermann nitrosoaniline reaction
- C. Hofmann bromamide reaction
- D. all of these.

**Answer: B**



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**16.** A mixture of  $1^\circ$ ,  $2^\circ$  and  $3^\circ$  amines can be separated by Hinsberg's reagent which is

- A. Benzoyl chloride
- B. acetyl chloride

C. benzene sulphonyl chloride

D. benzyl chloride.

**Answer: C**

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

A. acetyl chloride

B. benzene sulphonyl chloride

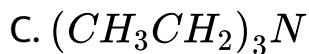
C. diethyl oxalate

D. nitrous acid.

Answer: C

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18. Which of the following amines does not react with Hinsberg's reagent?



D. all will react .

Answer: C

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19. An amine (X) reacts with benzene sulphonyl chloride and the product thus obtained is soluble in KOH . The amine (X) is

A.  $1^\circ$  amine

B.  $2^\circ$  amine

C.  $3^\circ$  amine

D. None of these

**Answer: A**



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20. How many primary formula of  $C_4H_{11}N$ ?

A. 1

B. 2

C. 3

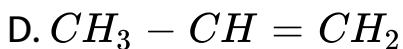
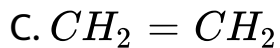
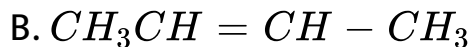
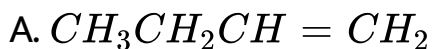
D. 4

**Answer: D**



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21. When *tert*-butyl trimethyl amine is heated strongly then major product obtained is



**Answer: A**



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22. Which one of the following is called a carbylamine?



D. RNC

**Answer: D**



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**23.** Hofmann rearrangement during the conversion of an amide to amine is

A. intermolecular

B. intramolecular

C. both (a) and (b)

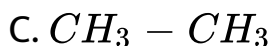
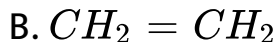
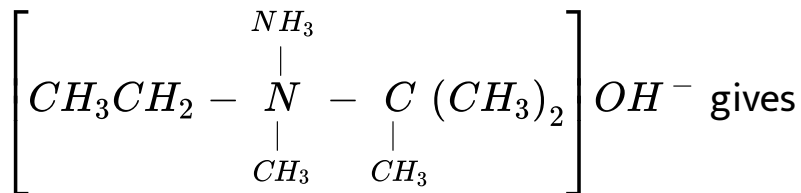
D. none of these.

**Answer: B**



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24. Thermal decomposition of



Answer: B



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25. Ethyl amine can be obtained from methyl iodide by reaction with alcoholic KCN followed by

- A. hydrolysis
- B. reduction
- C. oxidation
- D. reaction with ammonia.

**Answer: B**



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26. Which one of the following methods is neither meant for the synthesis nor for separation of amides?

A. Hinsberg method

B. Hofmann method

C. Wurtz reaction

D. Curtius reaction

**Answer: C**

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27. Which of the following is Hofmann mustard oil reaction ?

A. Reaction of primary amine with  $CHCl_3$

B. Reaction of primary amine with  $CHCl_3 + KOH$

C. Reaction of primary amine with  $CS_2 + HgCl_2$

D. Reaction of aromatic amine with iodoform.

**Answer: C**

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28. The reagent that reacts with nitromethane to methylhydroxyl amine is

A.  $Zn//HCl$

B.  $Zn/NH_4Cl$

C.  $Zn/NaOH$

D.  $Sn/HCl$

**Answer: B**

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**29.** Treatment of ammonia with excess of ethyl iodide will yield

A. diethyl amine

B. ethyl amine

C. triethyl amine

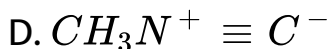
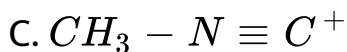
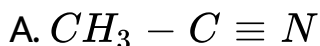
D. tetraethyl ammonium iodide.

**Answer: D**

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



**Answer: D**



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**Wbjee Workout Category 2 Single Option Correct Type 2  
Marks**

1. A compound (X) with molecular formula  $C_2H_5ON$  forms a compound Y when treated with  $Br_2$  and KOH. Y on heating with chloroform and alcoholic KOH produces a compound Z with very offensive smell. The compound 'X' is

- A. an amine
- B. an amide
- C. a hydroxylamine
- D. an aminoaldehyde.

**Answer: B**



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2. Gas evolved in Bhopal gas tragedy was

A. methane

B.  $CO_2$

C. methyl isocyanide

D. butene

**Answer: C**



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3. Condensation of ethyl amine with acetaldehyde gives a compound A which upon reduction with hydrogen and nickel gives

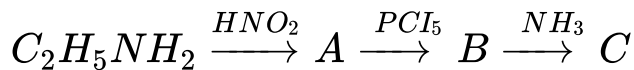
- A. diethyl amine
- B. ethyl methyl amine
- C. triethyl amine
- D. dimethyl amine.

**Answer: A**



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



A. Ethyl cyanide

B. Methylaminc

C. Ethylamine

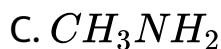
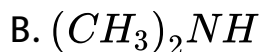
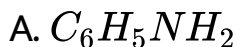
D. Acetamide

**Answer: C**



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5. Considering the basic strength of amines in aqueous solution, which one has the smallest  $pK_b$  value?

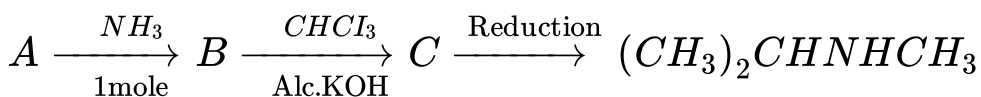


**Answer: B**



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6. Identify A in the following sequence of reactions:



A. Ethyl halide

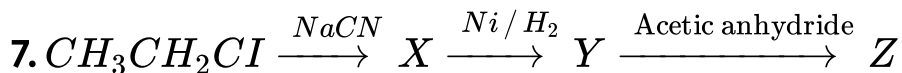
B. Iso-propylamine

C. n-Propyl halide

D. Iso-propyl halide

**Answer: D**

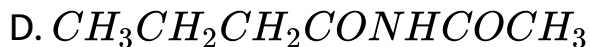
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Z in the above reaction sequence is

A.  $\text{CH}_3\text{CH}_2\text{CH}_2\text{NHCOCH}_3$

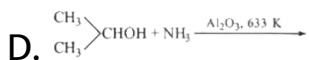
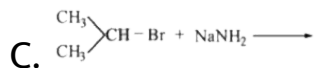
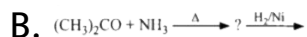
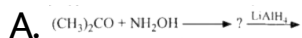
B.  $\text{CH}_3\text{CH}_2\text{CH}_2\text{NH}_2$



**Answer: A**

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**8. Iso-propylamine cannot be obtained by**



**Answer: C**





9. Amines are well known to be stronger bases and nucleophiles than alkenes. Why do enamines, such as 1-dimethylaminocyclopentene, preferentially react with electrophiles at a double bond carbon rather than at nitrogen?

- A. The nitrogen is sterically hindered by alkyl substituents.
- B. Nitrogen is more electronegative than carbon.
- C. The carbocation formed by electrophilic attack at C-2 is stabilized by  $\pi$  bonding with the lone pair of

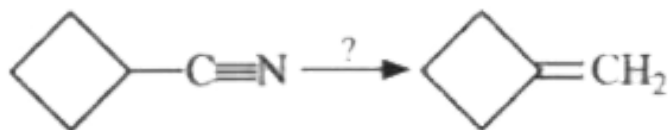
electrons on nitrogen.

D. Ammonium cations are less stable than carbocations.

**Answer: C**

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10. What sequence of reactions would best accomplish the following reaction?



A. I.  $LiAlH_4$  in ether

II.  $CH_3I$  followed by heating with  $AgOH$

B. I.  $\text{LiAlH}_4$  in ether

II.  $\text{P}_2\text{O}_5$  and heat

C. I. 20 %  $\text{H}_2\text{SO}_4$  and heat

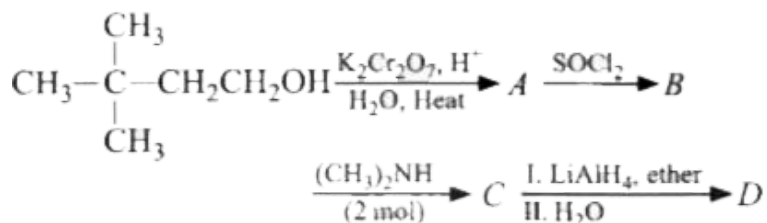
II.  $\text{P}_2\text{O}_5$  and heat

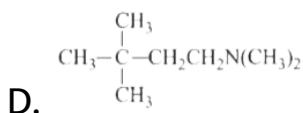
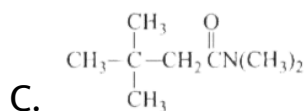
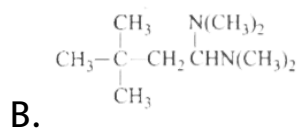
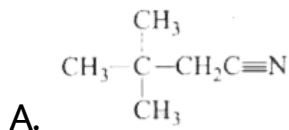
D. I.  $\text{H}_2$  and Lindlar's catalyst

Answer: A

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11. Identify product D in the following reaction sequence :



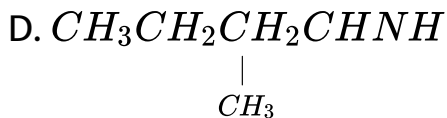
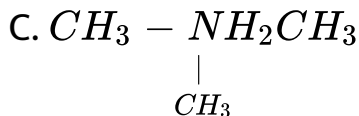
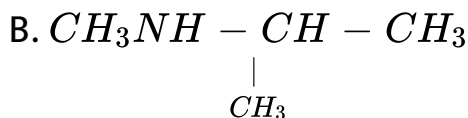
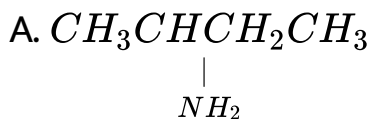


**Answer: D**

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12. An optically active amine (A) of molecular formula  $C_4H_{11}N$  is subjected to Hofmann's exhaustive methylation process and following hydrolysis an alkene

(B) is produced which upon ownolysis and subsequent hydrolysis yields formaldehyde and propanal. The amine 'A' is

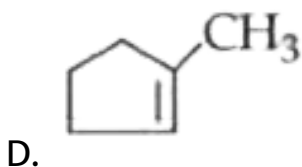
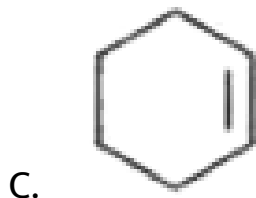
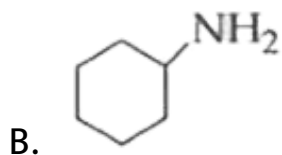
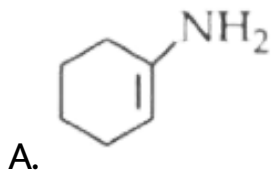
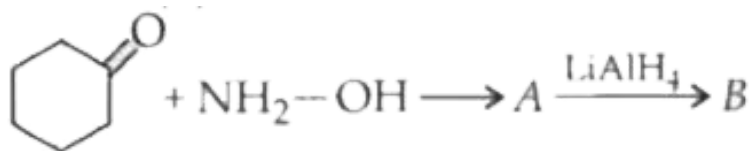


**Answer: A**

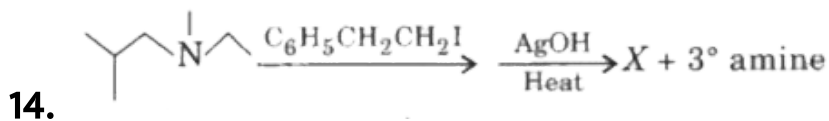


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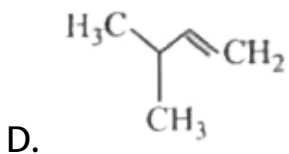
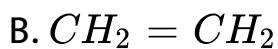
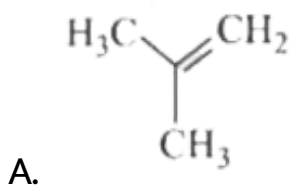
13. Product (B) of the following reaction is



Answer: B



The final product X is



Answer: C

15. An organic compound 'P' (mol mass -75) on reduction gives compound 'Q' which yields compound 'R' when treated with nitrous acid. Compound R responds to iodoform reaction. Compound Q is

A. ethyl alcohol

B. nitroethane

C. ethanamine

D. propanol

**Answer: C**

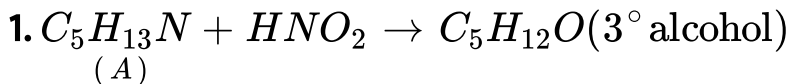


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# Wbjee Workout Category 3 One Or More Than One Option

Correct Type 2 Marks



Hence (A) gives

A. carbylamine reaction

B. diazonium salt

C. Hofmann mustard oil

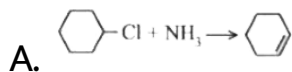
D. Zerewitinoff's reaction.

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

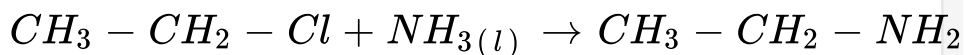


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2. Which are correct reactions'?



C.



D. None of these

Answer: A::B::C

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3. The products of reaction of alcoholic silver nitrite with ethyl bromide are

A. ethane

B. ethene

C. nitroethane

D. ethyl nitrite.

**Answer: C::D**



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4. Which of the following statements are correct regarding N-methyl aniline?

A. It is less basic than aniline.

B. It is optically inactive due to rapid pyramidal inversion.

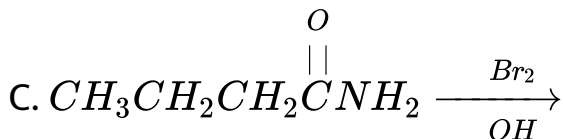
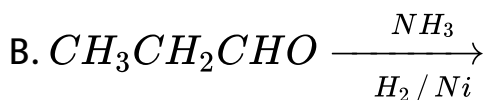
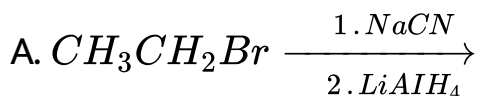
C. It is more reactive than aniline towards  $Br_2/Fe$ .

D. It is soluble in dil. HCl.

**Answer: B::C::D**

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5. Which of the following yields propyl amine?



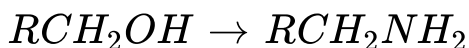


Answer: A::B::C



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6. Which of the following sequence of reagents is a good means to furnish the conversion?



A.  $KMnO_4$ ,  $SOCl_2$ ,  $NH_3$ , heat,  $Obr$

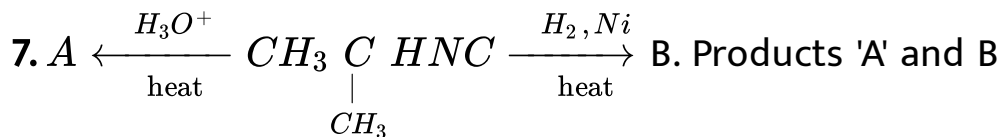
B.  $PBr_3$ ,  $NaCN$ ,  $H_2$ ,  $Ni$

C. Collin's reagent,  $NH_3$ ,  $H_2$ ,  $Ni$

D.  $Cu$ ,  $300^\circ C$ ,  $NH_3$ ,  $NaBH_3$ ,  $CN$

Answer: C::D

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can distinguished by

A. the distinguished of  $CHCl_3$ ,  $^-OH$

B. the action of  $HNO_2$ , A liberates  $N_2$  gas while B

does not

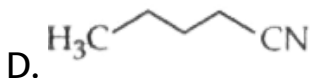
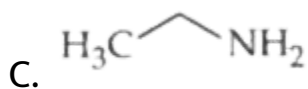
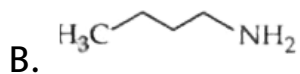
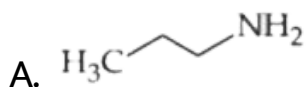
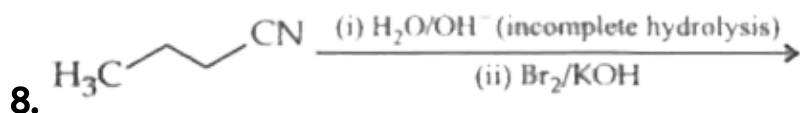
C. the action of  $CS_2$ ,  $HgCl_2$ . A gives odour o f

mustard oil while B doesn't

D. the treatment of benzene sulphonyl chloride, 'A'  
gives alkali soluble product

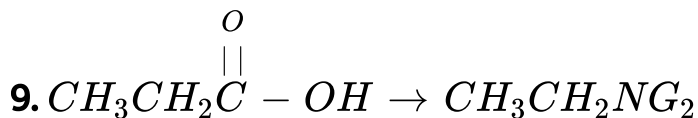
Answer: A::B::C::D

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Answer: A

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Which of the following is/are effective for this conversion?

- A.  $\text{NH}_3$  (excess), heat,  $\text{Na}$ ,  $\text{C}_2\text{H}_5\text{OH}$
- B.  $\text{N}_3\text{H}$ , cold conc.  $\text{H}_2\text{SO}_4$
- C.  $\text{NH}_3$  (excess) heat,  $\text{NaOH}$ ,  $\text{Br}_2$
- D.  $\text{SOCl}_2$ ,  $\text{NH}_3$

Answer: B::C





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

- A. Methylamine is more basic than  $NH_3$ .
- B. Amines form hydrogen bonds.
- C. Ethylamine has higher boiling point than propane.
- D. Dimethylamine is less basic than methylamine.

**Answer: A::B::C**



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1. The best method for preparation of  $Me_3CCN$  is

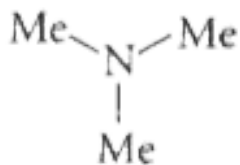
- A. to react  $Me_3COH$  with HCN
- B. to react  $Me_3CBr$  with NaCN
- C. to react  $Me_3CMgBr$  with  $CICN$
- D. to react  $Me_3Cl$  with  $NH^2CN$

**Answer: C**

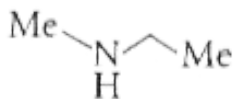


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2. An amine  $C_3H_9N$  reacts with benzene sulphonyl chloride to form a white precipitate which is insoluble in aq. NaOH. The amine is



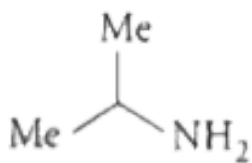
A.



B.



C.

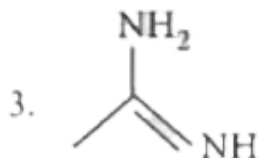
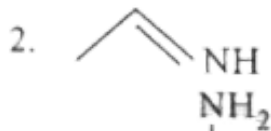


D.

**Answer: B**

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3. The correct order of basicity of the following compounds is



A.  $1 < 2 < 3 < 4$

B.  $1 < 2 < 4 < 3$

C.  $2 < 1 < 3 < 4$

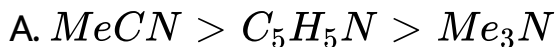
D.  $4 < 3 < 2 < 1$

**Answer: C**



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4. Among  $Me_3N$ ,  $C_5H_5N$  and  $MeCN$  (Me = methyl group). the electronegativity of N is in the order



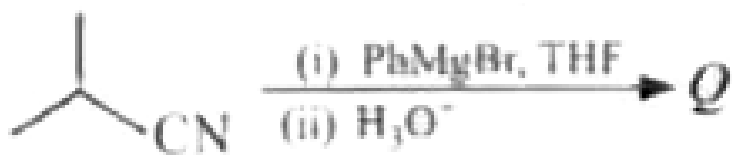
D. electronegativity is same in all .

**Answer: A**

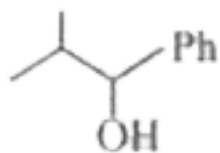


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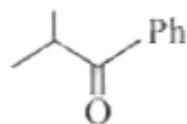
5. For the reaction below.



the structure of the product Q is



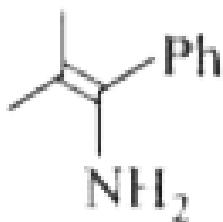
A.



B.



C.



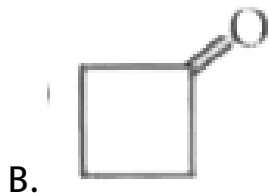
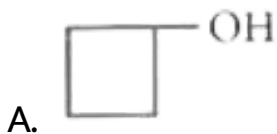
D.

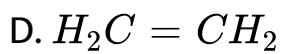
Answer: B

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**Wb Jee Previous Years Questions Category 3 One Or More Than One Option Corred Type 2 Marks**

1. The possible product(s) to be obtained from the reaction of cyclobutyl amine with  $HNO_2$  is/are





**Answer: A::C**

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