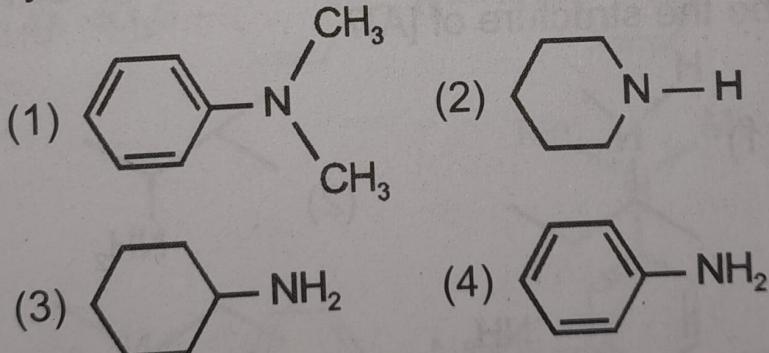


- (1) $\text{CH}_3\text{CH}_2\text{NHCOCH}_3 + \text{CH}_3\text{CH}_2\text{N}\equiv\text{C}$
- (2) $\text{CH}_3\text{CH}_2\text{NO}_2 + \text{CH}_3\text{COOH}$
- (3) $\text{CH}_3\text{CH}_2\text{NHCOCH}_3 + \text{CH}_3\text{COOH}$
- (4) $\text{CH}_3\text{CH}_2\text{NO}_2 + \text{CH}_3\text{CH}_2\text{NHCOCH}_3$

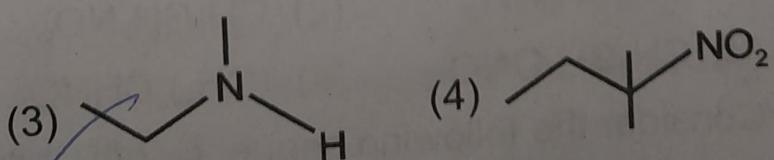
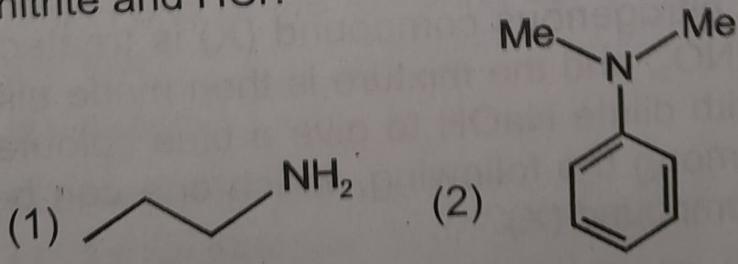
14. A mixture containing primary, secondary and tertiary amine is treated with diethyl oxalate. Choose the correct statement.

- (1) The distillate of the mixture after treatment mainly contains 1° amine
- (2) 3° amine do not react with diethyl oxalate
- (3) This is Hinsberg method of separating 1° , 2° & 3° amines
- (4) 3° amine is removed by filtration

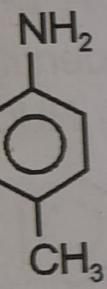
15. Among the following compounds, which one will produce an enamine on reaction with cyclohexanone?



16. Which of the following will not react with sodium nitrite and HCl?



basic strength



(III)

II

III

methyl aniline

basic?

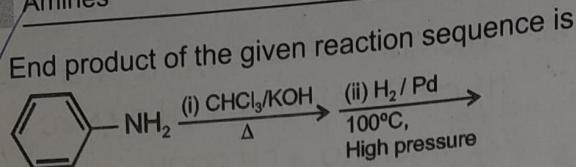
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Amines



- (1)
- (2)
- (3)
- (4)

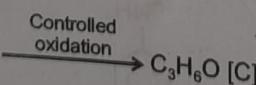
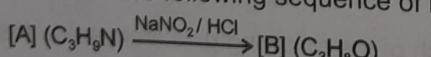
19. An optically active compound [A] $\text{C}_5\text{H}_{13}\text{N}$ reacts with alkaline CHCl_3 to give an optically active compound [B]. [A] also reacts with nitrous acid to give an optically inactive alcohol [C] ($\text{C}_5\text{H}_{11}\text{OH}$) as the major product. What would be the structure of [A]?

- (1)
- (2)
- (3)
- (4)

20. A nitrogenous compound (X) is treated with HNO_2 , and the mixture is then made alkaline with dilute NaOH to give a blue colouration. Among the following, which one can be the compound (X)?

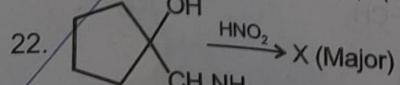
- (1) $\text{CH}_3\text{CH}_2\text{NH}_2$
- (2) $\text{CH}_3\text{CH}_2\text{NO}_2$
- (3) $\text{CH}_3\text{CH}_2\text{ONO}$
- (4) $(\text{CH}_3)_2\text{CHNO}_2$

21. Consider the following sequence of reactions.

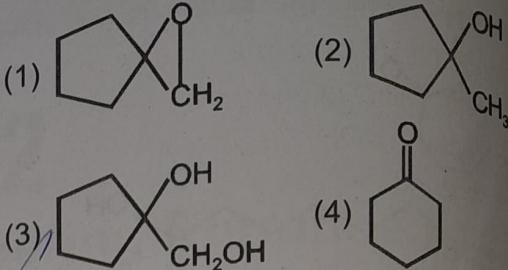


The compound [A] is

- (1) $\text{CH}_3\text{CH}_2\text{NHCH}_3$
- (2) $\text{CH}_3\text{CH}_2\text{CH}_2\text{NH}_2$
- (3) $(\text{CH}_3)_3\text{CNH}_2$
- (4) $(\text{CH}_3)_3\text{N}$



X is



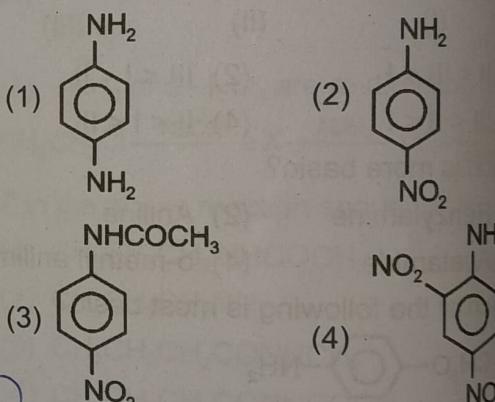
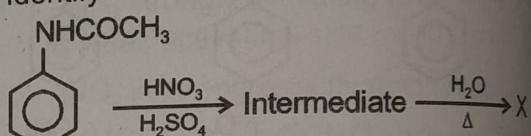
23. An amine reacts with $\text{C}_6\text{H}_5\text{SO}_2\text{Cl}$ and the product is soluble in alkali, amine is

- (1) 1° amine
- (2) 2° amine
- (3) 3° amine
- (4) All of these

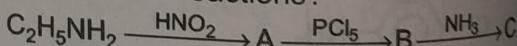
24. Which would not react with benzene sulphonic chloride in aqueous NaOH ?

- (1) Aniline
- (2) N,N-dimethylaniline
- (3) p-toluidine
- (4) N-ethyl aniline

25. Identify X in the series.



26. What is the end product in the following sequence of reactions?



- (1) Ethylcyanide
- (2) Ethylamine
- (3) Methylamine
- (4) Acetamide

27. Treatment of ammonia with excess of ethyl chloride will yield

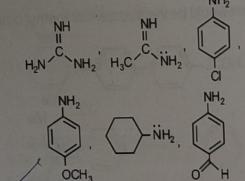
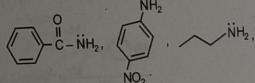
- (1) Diethylamine
- (2) Methylamine
- (3) Tetra ethyl ammonium chloride
- (4) Ethane

28. 2, 4, 6-tribromo aniline is a product of

- (1) Electrophilic addition on $\text{C}_6\text{H}_5\text{NH}_2$
- (2) Electrophilic substitution on $\text{C}_6\text{H}_5\text{NH}_2$
- (3) Nucleophilic addition on $\text{C}_6\text{H}_5\text{NH}_2$
- (4) Nucleophilic substitution on $\text{C}_6\text{H}_5\text{NH}_2$

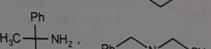
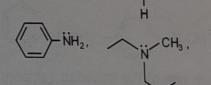
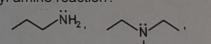
Numerical Value Based Questions

37. Examine the structural formulas of following compounds and identify how many compounds are more basic than aniline.

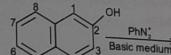


38. When meta-dinitrobenzene reacts with H_2S in presence of NH_3 form a compound X by gaining 'n' number of electrons. The value of 'n' is

39. Of the following amines, how many can give carbonyl amine reaction?

**[Diazonium Salts]**

40. Consider the following reaction.



The position number at which PhN_2^+ attacks to form major product is

PREVIOUS YEARS QUESTIONS**Objective Type Questions**
[Preparation of Amines]

41. A compound 'X' on treatment with $Br_2/NaOH$, test C₆H₅ gives positive carbylamine test. Compound 'X' is [JEE (Main)-2019]

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- (1) $CH_3CH_2CH_2CONH_2$
(2) $CH_3COCH_2NHCH_3$
(3) $CH_3CH_2COCH_2NH_2$
(4) $CH_3CON(CH_3)_2$

42. Which of the following amines can be prepared by Gabriel phthalimide reaction? [JEE (Main)-2019]

- (1) Neo-pentylamine (2) n-butylamine
(3) t-butylamine (4) Triethylamine

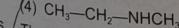
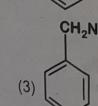
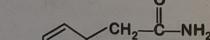
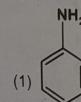
43. Which of the following is NOT a correct method of the preparation of benzylamine from cyanobenzene? [JEE (Main)-2019]

- (1) $SnCl_4 + HCl(g)$ (ii) $NaBH_4$
(2) H_2/Ni (iii) $LiAlH_4$ (iv) H_3O^+
(4) (i) HCl/H_2O (ii) $NaBH_4$

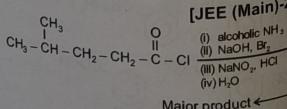
44. The most appropriate reagent for conversion of C_2H_5CN into $CH_3CH_2CH_2NH_2$ is [JEE (Main)-2020]

- (1) $NaBH_4$ (2) CaH_2
(3) $Na(CN)BH_3$ (4) $LiAlH_4$

45. Which of the following compounds can be prepared in good yield by Gabriel phthalimide synthesis? [JEE (Main)-2020]



46. The major product of the following reaction is [JEE (Main)-2021]



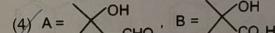
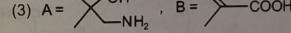
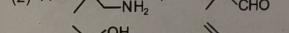
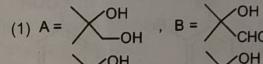
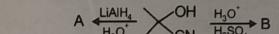
- (1) $CH_3 - CH - CH_2 - CH_2OH$
CH₃

- (2) $CH_3 - CH - CH - CH_2OH$
CH₃

- (3) $CH_3 - CH - CH_2 - CH_2 - Cl$
CH₃

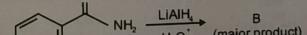
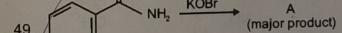
- (4) $CH_3 - CH - CH_2 - CH_2 - CH_2OH$
CH₃

47. The major products A and B in the following set of reactions are [JEE (Main)-2021]

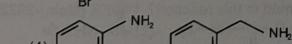
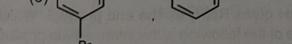
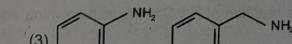
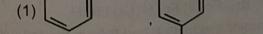
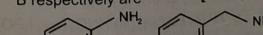


48. In the reaction of hypobromite with amide, the carbonyl carbon is lost as [JEE (Main)-2021]

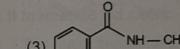
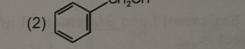
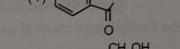
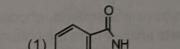
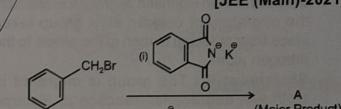
- (1) CO_3^{2-} (2) HCO_3^-
(3) CO_2 (4) CO



- In the above reactions, product A and product B respectively are [JEE (Main)-2021]



50. What is A in the following reaction? [JEE (Main)-2021]



51. Match List-I and List-II.

List-I

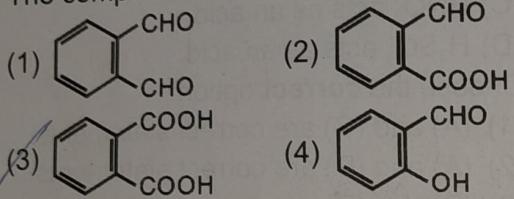
- (a) $R - C - Cl \rightarrow R - CHO$ (i) $Br_2/NaOH$
(b) $R - CH_2 - COOH \rightarrow$ (ii) $H_2/Pd - BaSO_4$
R-CH-COOH
(c) $R - C - NH_2 \rightarrow R - NH_2$ (iii) $Zn(Hg)/Conc.HCl$
(d) $R - C - CH_3 \rightarrow R - CH_2 - CH_3$ (iv) $Cl_2/Red\ P, H_2O$

List-II

85. In Friedel-Crafts alkylation of aniline, one gets [JEE (Main)-2022]

- (1) Alkylated product with ortho and para substitution.
- (2) Secondary amine after acidic treatment.
- (3) An amide product.
- (4) Positively charged nitrogen at benzene ring.

86. An organic compound 'A' on reaction with NH_3 followed by heating gives compound B. Which on further strong heating gives compound C ($\text{C}_8\text{H}_5\text{NO}_2$). Compound C on sequential reaction with ethanolic KOH, alkyl chloride and hydrolysis with alkali gives a primary amine. The compound A is [JEE (Main)-2022]



87. Given below are two statements: one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**. [JEE (Main)-2022]

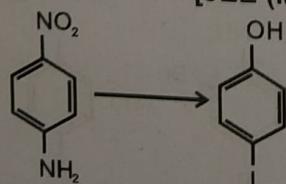
Assertion (A) : Experimental reaction of CH_3Cl with aniline and anhydrous AlCl_3 does not give *o* and *p*-methyl aniline.

Reason (R) : The $-\text{NH}_2$ group of aniline becomes deactivating because of salt formation with anhydrous AlCl_3 and hence yields *m*-methyl aniline as the product.

In the light of the above statements, choose the **most appropriate** answer from the options given below.

- (1) Both (A) and (R) are true and (R) is the correct explanation of (A).
- (2) Both (A) and (R) are true but (R) is not the correct explanation of (A).
- (3) (A) is true, but (R) is false.
- (4) (A) is false, but (R) is true.

88. The correct sequential order of the reagents for the given reaction is [JEE (Main)-2022]



- (1) HNO_2 , Fe/H^+ , HNO_2 , KI , $\text{H}_2\text{O}/\text{H}^+$
- (2) HNO_2 , KI , Fe/H^+ , HNO_2 , $\text{H}_2\text{O}/\text{warm}$
- (3) HNO_2 , KI , HNO_2 , Fe/H^+ , $\text{H}_2\text{O}/\text{H}^+$
- (4) HNO_2 , Fe/H^+ , KI , HNO_2 , $\text{H}_2\text{O}/\text{warm}$

89. Match List I with List II.

[JEE (Main)-2022]

List-I	List-II
A. Benzenesulphonyl Chloride	I. Test for primary amines
B. Hoffmann bromamide reaction	II. Anti Saytzeff
C. Carbylamine reaction	III. Hinsberg reagent
D. Hoffmann orientation	IV. Known reaction of Isocyanates

Choose the correct answer from the options given below.

- (1) A-IV, B-III, C-II, D-I
- (2) A-IV, B-II, C-I, D-II
- (3) A-III, B-IV, C-I, D-II
- (4) A-IV, B-III, C-I, D-II

90. Given below are two statements: one is labelled as **Assertion A** and the other is labelled as **Reason R**.

Assertion A : Aniline on nitration yields ortho, meta & para nitro derivatives of aniline.

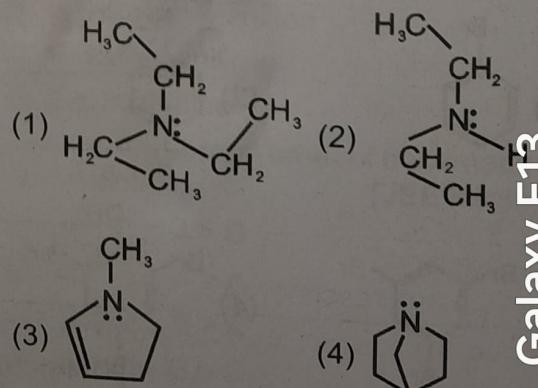
Reason R : Nitrating mixture is a strong acidic mixture.

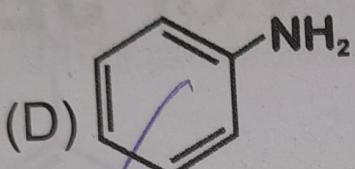
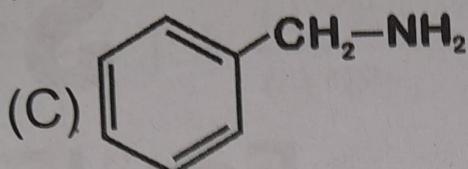
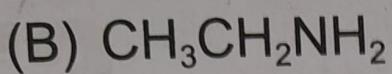
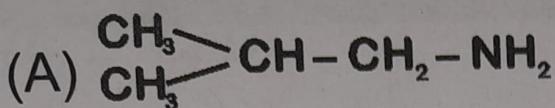
In the light of the above statements, choose the correct answer from the options given below.

[JEE (Main)-2022]

- (1) Both A and R are true and R is the correct explanation of A
- (2) Both A and R are true but R is NOT the correct explanation of A
- (3) A is true but R is false
- (4) A is false but R is true

- 91*. Which among the following is the strongest Bronsted base? [JEE (Main)-2022]





114. Number of isomeric aromatic amines with molecular formula $\text{C}_8\text{H}_{11}\text{N}$, which can be synthesized by Gabriel Phthalimide synthesis is _____.

[JEE (Main)-2023]

[Physical and Chemical Properties of Amines]

115. In gaseous triethyl amine the “ $-\text{C}-\text{N}-\text{C}-$ ” bond angle is _____ degree.

[JEE (Main)-2021]