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T.D.C. Part-I (Hons)

 **UNIT:VI: ORGANIC COMPOUNDS OF NITROGEN**

Amines

Practice set for students

Nomenclature

**1.**CH3-NH2

2.CH3-CH2-NH2

3.CH3CH2-CH2-NH2

4.CH3-CH2-CH2-CH2-NH2

5.CH3-CH2-CH2-CH2-CH2-NH2

1.CH3-CH-CH3

 |

 NH2

2. CH3-CH-CH2-CH3

 |

 NH2

3. CH3-CH2-CH-CH3

 |

 NH2

4. CH3-CH-CH2-CH2-CH3

 |

 NH2

5. CH3-CH2-CH-CH2-CH3

 |

 NH2

6. CH3-CH2-CH2-CH-CH3

 |

 NH2

7.CH3-NH-CH3

8.CH3-NH-CH2-CH3

9.CH3-NH-CH2-CH2-CH3

10.CH3-NH-CH2-CH2-CH2-CH3

11.CH3-NH-CH2-CH2-CH2-CH2-CH3

12.CH3-CH2-NH-CH2-CH3

13.CH3-CH2-NH-CH2-CH2-CH3

14.CH3-CH2-NH-CH2-CH2-CH2-CH3

15.CH3-CH2-NH-CH2-CH2-CH2-CH2-CH3

16.CH3-CH-NH2

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 CH3

17. CH3-CH2-CH-NH2

 |

 CH3

18.CH3-CH2-CH2-CH-NH2

 |

 CH3

19.CH3-CH2-CH2-CH2-CH-NH2

 |

 CH3

20.CH3-CH2-CH2-CH2-CH2-CH-NH2

 |

 CH3

21. CH3-CH-CH-NH2

 | |

 CH3 CH3

22.CH3-CH2-CH-CH-NH2

 | |

 CH3CH3

23. CH3-CH-CH2-CH-NH2

 | |

 CH3 CH3

24.CH3-CH2-CH2-CH-CH-NH2

 | |

 CH3 CH3

24.CH3-CH2-CH2-CH-CH2-CH-NH2

 | |

 CH3 CH3

25. CH3-CH2-CH-CH2-CH2-CH-NH2

 | |

 CH3 CH3

26.CH3-CH-CH2-CH2-CH2-CH-NH2

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 CH3  CH3

  **Amines**

Ans: Alkyl or aryl derivatives of ammonia (NH3) are called amine.

 NH3$→$R-NH2

Ammonia Alkyl amine

 NH3$→$Ar-NH2

Ammonia Aromatic amine

**Classification**

The aliphatic amines have been classified as :

 Ans: **Primary amine (1**$°$**):** One H-atom of NH3 is replaced by alkyl group we get primary amine.

 H

 |

 H-N-H$→$R-NH2

 The functional group of 1$°$ amine is –NH2, and the general formula is R-NH2. e.g.

 CH3-NH2 CH3-CH2-NH2

 Methyl amine Ethyl amine

**Secondary amine (2**$°$**):** Two H-atom of NH3 is replaced by alkyl group we get secondary amine.The functional group of 2$°$ amine is –N-H and the

General formula is R-NH.

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 R

 .. ..

H-N-H $→$ R-N-R

 | |

 H H [2$°$ AMINE]

E.g. CH3-N-CH3

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 H [Dimethyl amine]

**Tertiary amine (3**$°$**):** Three H-atom of NH3 is replaced by alkyl group We get 3$°$ amine. The functional group of 3$°$ amine is -N- and the general

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Formula is R-N-R.

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 R

 .. ..

H-N-H $→$ R-N-R

 | |

 H R [2$°$ AMINE]

E.g. CH3-N-CH3

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 CH3 [Trimethyl amine]

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| s.no. | Properties | Primary amine | Secondary amine | Tertiary amine |
| 1. | General formula | R-NH2 | R2-NH | R3-N |
| 2. | Functional group | -NH2 | =NH | $≡$N |
| 3. | Example | CH3-NH2 | (CH3)2-NH | (CH3)3-N |
| 4. | Reaction with CHCl3 and KOH | It reacts with CHCl3 and KOH soln and gives carbyl amine.R-C$≡$N + CHCl3 +3KOH → R-C= N+3KCl +H2O | No reaction | No reaction |
| 5. | Reaction of HNO2 | It reacts with HNO2 and gives alcohol and N2.R-NH2+HNO2→R-OH+N2+H2O | It gives yellow oil of nitroso amine.R2-NH+HNO2→R2-N-NO+H2O | It reacts with HNO2 and gives soluble nitric sait.R3-N+HNO2→[R3-N-H] + NO2- |
| 6. | Reaction of acyl halide | They form mono and also diacetylDerivative. | Form mono acetyl Derivative anyl. | No reaction. |