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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

|

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-HR-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.

|

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

.. |

Formula is R-N-R.

|

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-CN + 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 diacetyl  Derivative. | Form mono acetyl  Derivative anyl. | No reaction. |