

**Question  
Set  
14**

# NOMENCLATURE

**Q. Answer the following :**

**(1 mark each)**

[Note : There may be a question of 2 marks on IUPAC nomenclature (or writing structures for given compounds). Write the answer in two columns.]

## Chapter 9. Coordination Compounds

**Q. 1. Write the IUPAC names of the following coordination compounds :**

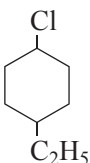
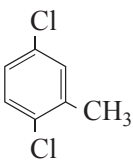
| Complex  | Ans. | IUPAC name                              |
|--|------|---|
| <b>(1) Anionic complexes :</b>                                     |      |   |
| (a) $[\text{Ni}(\text{CN})_4]^{2-}$                                |      | Tetracyanonickelate (II) ion            |
| (b) $[\text{Co}(\text{C}_2\text{O}_4)_3]^{3-}$                     |      | Trioxalatocobaltate (III) ion           |
| <b>(2) Compounds containing complex anions and metal cations :</b> |      |   |
| (a) $\text{K}_3[\text{Al}(\text{C}_2\text{O}_4)_3]$                |      | Potassium trioxalatoaluminate (III)     |
| (b) $\text{Na}_3[\text{AlF}_6]$                                    |      | Sodium hexafluoroaluminate (III)        |
| <b>(3) Cationic complexes :</b>                                    |      |   |
| (a) $[\text{Cu}(\text{NH}_3)_4]^{2+}$                              |      | Tetraamminecopper (II) ion              |
| (b) $[\text{Fe}(\text{H}_2\text{O})_5(\text{NCS})]^{2+}$           |      | Pentaaquaisothiocyanatoiron (III) ion   |
| <b>(4) Compounds containing complex cation and anion :</b>         |      |   |
| (a) $[\text{PtBr}_2(\text{NH}_3)_4]\text{Br}_2$                    |      | Tetraamminedibromoplatinum (IV) bromide |
| (b) $[\text{Co}(\text{H}_2\text{O})(\text{NH}_3)_5]\text{I}_3$     |      | Pentaammineaquacobalt (III) iodide      |
| <b>(5) Neutral complexes :</b>                                     |      |   |
| (a) $\text{Fe}(\text{CO})_5$                                       |      | Pentacarbonyliron (0)                   |
| (b) $\text{Rh}(\text{NH}_3)_3(\text{SCN})_3$                       |      | Triamminetrithiocyanatorhodium (III)    |

## Chapter 10. Halogen Derivatives

**Q. 2. Give the IUPAC names of the following compounds :**

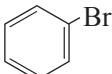
| Compound  | Ans. IUPAC name             |
|---|-----------------------------|
| (1) $\begin{array}{c} \text{CH}_3 \\   \\ \text{CH}_3 - \text{CH}_2 - \text{C} - \text{CH}_2 - \text{Cl} \\   \\ \text{CH}_3 \end{array}$ | 1-Chloro-2,2-dimethylbutane |
| (2) sec-butyl chloride<br>$\begin{array}{c} \text{CH}_3 - \text{CH}_2 - \text{CH} - \text{CH}_3 \\   \\ \text{Cl} \end{array}$            | 2-Chlorobutane              |

**Q. 3. Write IUPAC name of the following compounds :**

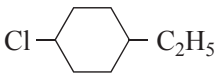
| Compound   | Ans. IUPAC names               |
|--|--------------------------------|
| (1) $\begin{array}{c} \text{CH}_3 - \text{CH} = \text{C} - \text{CH} - \text{Br} \\   \quad   \\ \text{CH}_3 \text{CH}_3 \end{array}$          | 4-Bromo-3,4 dimethyl but-2-ene |
| (2) $\begin{array}{c} \text{CH}_3 - \text{CH} - \text{CH} - \text{CH}_2 - \text{CH}_3 \\   \quad   \\ \text{Cl} \quad \text{CH}_3 \end{array}$ | 2-Chloro-3-methyl pentane      |
| (3)    | 1-Chloro-4-ethyl cyclohexane   |
| (4)   | 1,4-Dichloro-2-methyl benzene  |

**Q. 4. Write IUPAC names of the following :**

| Structure  | Ans. IUPAC name |
|--|-----------------|
| (i) $\begin{array}{c} \text{CH}_3 - \text{CH} - \text{CH}_3 \\   \\ \text{Br} \end{array}$ | 2-Bromopropane  |

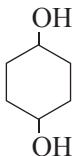
|   |                         |
|---|-------------------------|
| (ii) $\text{CH}_3 - \underset{\text{CH}_3}{\text{CH}} - \text{CH}_2\text{I}$          | 1-Iodo-2-methyl propane |
| (iii) $\text{CH}_3 - \text{CH} = \text{CH} - \text{CH}_2 - \text{Cl}$                 | 1-Chloro-but-2-ene      |
| (iv) $\text{CH}_3 - \text{C} \equiv \text{C} - \text{CH}_2 - \text{Br}$               | 1-Bromo-but-2-yne       |
| (v)  | Bromobenzene            |

**Q. 5. Draw the structures of the following compounds :**

| Compound                              | Ans. Structure  |
|---------------------------------------|---|
| (1) 1,1,1-Trichloroethane             | $\begin{array}{c} \text{Cl} \\   \\ \text{CH}_3 - \text{C} - \text{Cl} \\   \\ \text{Cl} \end{array}$   |
| (2) 3-Bromo-2-methylpentane           | $\begin{array}{c} \text{CH}_3 \\   \\ \text{CH}_3 - \text{CH}_2 - \text{CH} - \text{CH} - \text{CH}_3 \\   \\ \text{Br} \end{array}$  |
| (3) 2-Bromo-3-ethyl-2-methylhexane    | $\begin{array}{c} \text{CH}_3 \quad \text{C}_2\text{H}_5 \\   \quad   \\ \text{CH}_3 - \text{C} - \text{CH} - \text{CH}_2 - \text{CH}_2 - \text{CH}_3 \\   \\ \text{Br} \end{array}$  |
| (4) 1-Iodo-2,2,4,4-tetramethylpentane | $\begin{array}{c} \text{CH}_3 \quad \quad \text{CH}_3 \\   \quad \quad   \\ \text{CH}_3 - \text{C} - \text{CH}_2 - \text{C} - \text{CH}_2 - \text{I} \\   \quad \quad   \\ \text{CH}_3 \quad \quad \text{CH}_3 \end{array}$ |
| (5) 3-Chloro-3-ethylhex-1-ene         | $\begin{array}{c} \text{Cl} \\   \\ \text{H}_3\text{C} - \text{H}_2\text{C} - \text{H}_2\text{C} - \text{C} - \text{HC} = \text{CH}_2 \\   \\ \text{C}_2\text{H}_5 \end{array}$   |
| (6) 1-Chloro-4-ethylcyclohexane       |    |

## Chapter 11. Alcohols, Phenols and Ethers

**Q. 6. Give the IUPAC names for the following alcohols :**

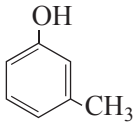
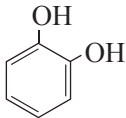
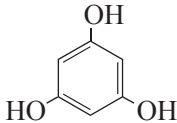
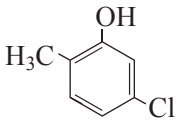
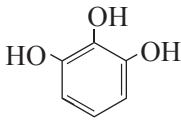
| Alcohol   | Ans. IUPAC name              |
|---|------------------------------|
| (1) $\begin{array}{c} \text{CH}_2\text{OH} \\   \\ \text{CH}_3 - \text{C} - \text{H} \\   \\ \text{CH}_3 \end{array}$   | 2-Methylpropan-1-ol          |
| (2) $\begin{array}{c} \text{CH}_2 = \text{C} - \text{CH} - \text{CH}_3 \\   \quad   \\ \text{Cl} \quad \text{OH} \end{array}$   | 2-Chlorobut-1-en-3-ol        |
| (3) $\begin{array}{c} \text{CH}_3 - \text{CH} - \text{CH} - \text{CH}_2 - \text{Br} \\   \quad   \\ \text{OH} \quad \text{OH} \end{array}$  | 1-Bromobutane-2,3-diol       |
| (4)    | Cyclohexane-1,4-diol         |
| (5) $\begin{array}{c} \text{CH}_3 - \text{CH} - \text{CH} - \text{CH}_3 \\   \quad   \\ \text{CH}_2 \quad \text{OH} \\   \\ \text{CH}_3 \end{array}$  | 3-Methylpentan-2-ol          |
| (6) $\begin{array}{c} \text{CH}_2 = \text{C} - \text{CH} - \text{C} - \text{CH}_3 \\   \quad   \quad   \\ \text{CH}_3 \text{OH} \quad \text{C}_2\text{H}_5 \\ \quad \quad   \\ \quad \quad \text{CH}_3 \end{array}$ | 2,4,4-Trimethylhex-1-en-3-ol |

**Q. 7. Write the structures of following alcohols :**

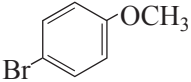
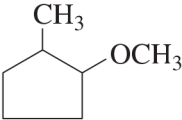
| Alcohol                        | Ans. Structure  |
|--------------------------------|---|
| (1) 2,3-Dimethylbutan-2-ol     | $\begin{array}{c} \text{OH} \\   \\ \text{CH}_3 - \text{CH} - \text{C} - \text{CH}_3 \\   \quad   \\ \text{CH}_3 \quad \text{CH}_3 \end{array}$   |
| (2) 2,2,3-Trimethylpentan-3-ol | $\begin{array}{c} \text{CH}_3\text{OH} \\   \quad   \quad   \quad   \\ \text{CH}_3 - \text{C} - \text{C} - \text{CH}_2 - \text{CH}_3 \\   \quad   \\ \text{CH}_3 \quad \text{CH}_3 \end{array}$<br><div style="text-align: center; margin-top: -10px;"> <sup>1</sup>      <sup>2</sup>      <sup>3</sup>      <sup>4</sup>      <sup>5</sup><br/> <sup>1</sup>CH<sub>3</sub>   <sup>2</sup>C   <sup>3</sup>C   <sup>4</sup>CH<sub>2</sub>   <sup>5</sup>CH<sub>3</sub> </div> |

|                             |  |
|-----------------------------|--|
| (3) 2, -Dimethylpentan-3-ol | $  \begin{array}{c}  \text{CH}_3 \\    \\  \text{CH}_3 - \text{C} - \text{CH} - \text{CH}_2 - \text{CH}_3 \\    \quad   \\  \text{CH}_3 \text{ OH}  \end{array}  $ |
| (4) 3-Phenylbutan-2-ol      | $  \begin{array}{c}  \text{CH}_3 \\    \\  \text{C}_6\text{H}_5 - \text{CH} - \text{CH} - \text{CH}_3 \\    \\  \text{OH}  \end{array}  $                          |
| (5) 3-Ethylpentan-3-ol      | $  \begin{array}{c}  \text{C}_2\text{H}_5 \\    \\  \text{C}_2\text{H}_5 - \text{C} - \text{OH} \\    \\  \text{C}_2\text{H}_5  \end{array}  $                     |
| (6) But-3-en-1-ol           | $\text{CH}_2 = \text{CH} - \text{CH}_2 - \text{CH}_2 - \text{OH}$  |

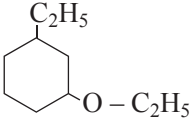
**Q. 8. Write the IUPAC names of the following compounds :**

| Compound  | Ans. IUPAC name         |
|---|-------------------------|
| (1)    | 3-Methylphenol          |
| (2)   | Benzene-1,2-diol        |
| (3)  | Benzene-1,3,5-triol     |
| (4)  | 5-Chloro-2-methylphenol |
| (5)  | Benzene-1,2,3-triol     |

**Q. 9. Give the IUPAC names for the following ethers :**

| Ether  | Ans. IUPAC name                 |
|--|---------------------------------|
| (1) $\text{C}_2\text{H}_5 - \text{O} - \text{C}_2\text{H}_5$   | Ethoxyethane                    |
| (2) $\text{CH}_3 - \text{O} - \text{C}_2\text{H}_5$  | Methoxyethane                   |
| (3) $\text{C}_2\text{H}_5 - \text{O} - \text{CH}_2 - \text{CH}_2 - \text{CH}_3$                      | 1-Ethoxypropane                 |
| (4) $\text{CH}_3 - \text{O} - \text{CH}_2 - \underset{\text{CH}_3}{\text{CH}} - \text{CH}_3$         | 1-Methoxy-2-methyl propane      |
| (5) $\text{CH}_3 - \text{O} - \underset{\text{CH}_3}{\overset{\text{CH}_3}{\text{C}}} - \text{CH}_3$ | 2-Methoxy-2-methyl propane      |
| (6)                 | 4-Bromo-1-methoxy benzene       |
| (7)                 | 1-Methoxy-2-methyl cyclopentane |

**Q. 10. Draw the structures of the following compounds :**

| Compound                        | Ans. Structure  |
|---------------------------------|---|
| (1) 1-Methoxypropane            | $\text{CH}_3 - \text{O} - \text{CH}_2 - \text{CH}_2 - \text{CH}_3$                  |
| (2) 3-Chloro-1-ethoxypropane    | $\text{CH}_3 - \text{CH}_2 - \text{O} - \text{CH}_2 - \text{CH}_2 - \text{Cl}$      |
| (3) Methoxybenzene              | $\text{C}_6\text{H}_5 - \text{O} - \text{CH}_3$                                     |
| (4) Ethoxy benzene              | $\text{C}_6\text{H}_5 - \text{O} - \text{C}_2\text{H}_5$                            |
| (5) 3-Ethoxy-1-ethylcyclohexane |  |

**Q. 11. Write the structural formula and IUPAC names of all possible isomers of the compound with molecular formula  $\text{C}_3\text{H}_8\text{O}$ .**

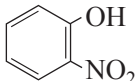
**Ans. Possible isomers of  $C_3H_8O$  with structural formulae and IUPAC names :**

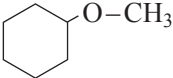
| Structure  | IUPAC name      |
|--|-----------------|
| (1) $CH_3-CH_2-CH_2-OH$                                    | Propan-1-ol     |
| (2) $\begin{array}{c} CH_3-CH-CH_3 \\   \\ OH \end{array}$ | Propan-2-ol     |
| (3) $CH_3-CH_2-O-CH_3$                                     | 1-Methoxyethane |

**Q. 12. Write structural formulae for :**

| IUPAC name              | Ans. Structural formula   |
|-------------------------|---|
| (1) 3-Methoxyhexane     | $CH_3-CH_2-\underset{\begin{array}{c}   \\ O-CH_3 \end{array}}{CH}-CH_2-CH_2-CH_3$                  |
| (2) Methyl vinyl ether  | $CH_2=CH-OCH_3$   |
| (3) 1-Ethylcyclohexanol | $\begin{array}{c} H_5C_2 \quad OH \\ \diagdown \quad / \\ \text{Cyclohexane ring} \end{array}$      |
| (4) Pentane-1,4-diol    | $\begin{array}{ccccccc} H_2C & -CH_2- & CH_2- & CH- & CH_3 \\   & & &   \\ OH & & & OH \end{array}$ |
| (5) Cyclohex-2-en-1-ol  | $\begin{array}{c} OH \\   \\ \text{Cyclohexene ring} \end{array}$                                   |

**Q. 13. Write IUPAC names of the following :**

| Compound   | Ans. IUPAC name                        |
|--|--|
| (1) $\begin{array}{c} HO \quad CH_3 \\ \diagdown \quad / \\ \text{Cyclopentane ring} \end{array}$                            | 1-Methyl cyclopentanol                 |
| (2) $CH_3-\underset{\begin{array}{c}   \\ OH \end{array}}{CH}-\underset{\begin{array}{c}   \\ CH_3 \end{array}}{CH}-CH_2-OH$ | 2-Methyl butane-1,3-diol               |
| (3)                                       | 2-Nitrophenol ( <i>o</i> -nitrophenol) |

|   |                     |
|---|---------------------|
| (4)  | Methoxy cyclohexane |
|---|---------------------|

### Chapter 12. Aldehydes, Ketones and Carboxylic Acids

**Q. 14. Give the IUPAC names of the following compounds :**

| Compound  | Ans. IUPAC name       |
|---|-----------------------|
| (1) HCHO  | Methanal              |
| (2) CH <sub>3</sub> – CHO   | Ethanal               |
| (3) CH <sub>3</sub> – CH <sub>2</sub> – CHO   | Propanal              |
| (4) CH <sub>3</sub> – CH <sub>2</sub> – CH <sub>2</sub> – CHO   | Butanal               |
| (5) $\begin{array}{c} \text{CH}_3 - \text{CH} - \text{CHO} \\   \\ \text{CH}_3 \end{array}$   | 2-Methylpropanal      |
| (6) CH <sub>2</sub> = CH – CHO  | Prop-2-enal           |
| (7) $\begin{array}{c} \alpha \\ \text{CH}_3 - \text{CH} - \text{C} \begin{array}{l} \nearrow \text{O} \\ \searrow \text{H} \end{array} \\   \\ \text{Cl} \end{array}$ | 2-Chloropropanal      |
| (8) $\begin{array}{c} \text{CH}_3 \\   \\ \text{CH}_3 - \text{C} - \text{CHO} \\   \\ \text{CH}_3 \end{array}$  | 2, 2-Dimethylpropanal |

**Q. 15. Give the IUPAC names of the following ketones :**

| Ketone  | Ans. IUPAC name     |
|---|---------------------|
| (1) $\begin{array}{c} \text{O} \\    \\ \text{CH}_3 - \text{CH}_2 - \text{C} - \text{CH}_3 \end{array}$                           | Butan-2-one         |
| (2) $\begin{array}{c} \text{CH}_3 \quad \text{O} \\   \quad    \\ \text{CH}_3 - \text{CH} - \text{C} - \text{CH}_3 \end{array}$   | 3-Methylbutan-2-one |
| (3) $\begin{array}{c} \text{H} \\   \\ \text{CH}_3 - \text{CH} - \text{CH}_2 - \text{C} = \text{O} \\   \\ \text{OH} \end{array}$ | Pentan-3-olal       |



|  |                        |
|--|------------------------|
| <p>(4)</p> <p> <math display="block">\begin{array}{ccccccc} 6 &amp; 5 &amp; 4 &amp; 3 &amp; 2 &amp; 1 \\ \text{CH}_3 - &amp; \text{CH}_2 - &amp; \text{C} = &amp; \text{CH} - &amp; \text{C} - &amp; \text{CH}_3 \\ &amp; &amp;   &amp; &amp;    &amp; \\ &amp; &amp; \text{CH}_3 &amp; &amp; \text{O} &amp; \end{array}</math> </p> | 4-Methylhex-3-en-2-one |
|--|------------------------|

**Q. 16. Write IUPAC names for the following compounds :**

| Compound   | Structure   |
|------------|---|
| <p>(1)</p> | <p> <math display="block">\begin{array}{ccccccc} &amp; \text{Br} &amp; &amp; &amp; \text{CH}_3 &amp; &amp; \\ &amp;   &amp; &amp; &amp;   &amp; &amp; \\ 6 &amp; \text{CH}_3 - &amp; \text{C} - &amp; \text{CH}_2 - &amp; \text{CH}_2 - &amp; \text{C} - &amp; \text{CHO} \\ &amp;   &amp; &amp; &amp; &amp;   &amp; \\ &amp; \text{Br} &amp; &amp; &amp; &amp; \text{CH}_3 &amp; \end{array}</math> </p> |
| <p>(2)</p> |   |
| <p>(3)</p> | <p> <math display="block">\begin{array}{ccccccc} 5 &amp; 4 &amp; 3 &amp; 2 &amp; 1 \\ \text{CH}_3 - &amp; \text{CH}_2 - &amp; \text{CH}_2 - &amp; \text{CH}_2 - &amp; \text{CHO} \end{array}</math> </p>  |
| <p>(4)</p> |   |
| <p>(5)</p> |   |

**Ans. IUPAC names :** (1) 5,5-Dibromo-2,2-dimethyl hexanal

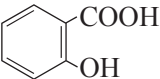
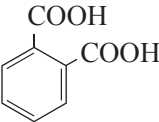
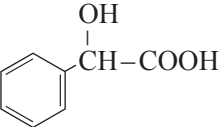
(2) 7-Ethyl-5,5-dimethyl Decane-3, 4-dione      (3) Pentanal

(4) 3,4-Dimethyl benzaldehyde      (5) 2,4-Dimethyl cyclohexanone.

**Q. 17. Give the structures of the following compounds :**

| Compound                          | Ans. Structure  |
|-----------------------------------|---|
| (1) Methanal                      | HCHO  |
| (2) 4-Methylpentanal              | $\text{CH}_3 - \underset{\text{CH}_3}{\text{CH}} - \text{CH}_2 - \text{CH}_2 - \text{CHO}$  |
| (3) Ethanal                       | $\text{CH}_3 - \text{CHO}$  |
| (4) Pentan-2-one                  | $\text{CH}_3 - \text{CO} - \text{CH}_2 - \text{CH}_2 - \text{CH}_3$   |
| (5) Propanal                      | $\text{CH}_3 - \text{CH}_2 - \text{CHO}$  |
| (6) 2-Methylpropanal              | $\text{CH}_3 - \underset{\text{CH}_3}{\text{CH}} - \text{CHO}$  |
| (7) Pentan-3-one                  | $\text{CH}_3 - \text{CH}_2 - \text{CO} - \text{CH}_2 - \text{CH}_3$   |
| (8) 2-Methylpentan-3-one          | $\text{CH}_3 - \underset{\text{CH}_3}{\text{CH}} - \text{CO} - \text{CH}_2 - \text{CH}_3$   |
| (9) 3-Methylbutanal               | $\text{CH}_3 - \underset{\text{CH}_3}{\text{CH}} - \text{CH}_2 - \text{CHO}$  |
| (10) 4-Methyl-3-nitrobenzophenone |   |
| (11) 2-Methyl-4-oxopentanal       | $\begin{array}{ccccccc} & & \text{O} & & & & \\ & &    & & & & \\ 5 & & 4 & & 3 & & 2 & & 1 \\ \text{CH}_3 - & \text{C} - & \text{CH}_2 - & \text{CH} - & \text{CHO} \\ & & &   & \\ & & & \text{CH}_3 & \end{array}$ |
| (12) 3-Oxopentanoic acid          | $\begin{array}{ccccccc} & & \text{O} & & & & \\ & &    & & & & \\ 5 & & 4 & & 3 & & 2 & & 1 \\ \text{CH}_3 - & \text{CH}_2 - & \text{C} - & \text{CH}_2 - & \text{COOH} \end{array}$                                  |
| (13) 4-Chloropropiophenone        |   |

**Q. 18. Write IUPAC names of the following compounds :**

| Compound   | Ans. IUPAC name  |
|--|--|
| (1) $\text{H} - \text{COOH}$   | Methanoic acid   |
| (2) $\text{CH}_3 - \text{COOH}$  | Ethanoic acid  |
| (3) $\text{CH}_3 - \text{CH}_2 - \text{COOH}$  | Propanoic acid   |
| (4) $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{COOH}$  | Butanoic acid  |
| (5) $\begin{array}{c} \text{CH}_3 \\   \\ \text{CH}_3 - \text{CH}^* - \text{COOH} \\ \text{3} \quad \text{2} \quad \text{1} \end{array}$<br><i>(July'22)</i> | 2-Methylpropanoic acid<br>$\alpha$ -Methylpropionic acid |
| (6) $\text{HOOC}(\text{CH}_2)_2\text{COOH}$  | Butanedioic acid   |
| (7) $\begin{array}{c} \text{H}_3\text{C} - \text{HC} - \text{HC} - \text{COOH} \\   \quad   \\ \text{CH}_3 \quad \text{CH}_3 \end{array}$                    | 2,3-Dimethylbutanoic acid                                |
| (8) $\begin{array}{c} \text{H}_3\text{C} - \text{HC} - \text{H}_2\text{C} - \text{COOH} \\   \\ \text{C}_6\text{H}_5 \end{array}$                            | 3-Phenylbutanoic acid                                    |
| (9)   | 2-Hydroxybenzoic acid                                    |
| (10)    | Benzene-1,2-dicarboxylic acid                            |
| (11)    | 2-Hydroxy-2-phenylethanoic acid                          |

**Q. 19. Write the structures of the following compounds :**

| Compound                           | Ans. Structure   |
|------------------------------------|--|
| (1) 2,3-Dimethylbutanoic acid      | $\begin{array}{c} \text{CH}_3 \quad \text{CH}_3 \\   \quad   \\ \text{CH}_3 - \text{CH} - \text{CH} - \text{C} \begin{array}{l} \nearrow \text{O} \\ \searrow \text{OH} \end{array} \end{array}$                             |
| (2) 3-Ethyl-2-methylpentanoic acid | $\begin{array}{c} \text{CH}_3 \\   \\ \text{CH}_3 - \text{CH}_2 - \text{CH} - \text{CH} - \text{C} \begin{array}{l} \nearrow \text{O} \\ \searrow \text{OH} \end{array} \\   \\ \text{CH}_2 \\   \\ \text{CH}_3 \end{array}$ |
| (3) 2,2-Dimethylpropanoic acid     | $\begin{array}{c} \text{CH}_3 \\   \\ \text{CH}_3 - \text{C} - \text{COOH} \\   \\ \text{CH}_3 \end{array}$  |
| (4) 3-Methyl-3-pentenoic acid      | $\text{CH}_3 - \text{CH} = \underset{\text{CH}_3}{\text{C}} - \text{CH}_2 - \text{COOH}$   |
| (5) Octanoic acid                  | $\text{CH}_3(\text{CH}_2)_6\text{COOH}$  |

### Chapter 13. Amines

**Q. 20. Give IUPAC names of the following compounds :**

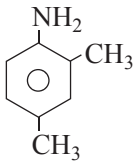
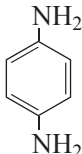
| Compound   | Ans. IUPAC name<br>(Alkanamines) |
|--|----------------------------------|
| (1) $\text{CH}_3 - \text{NH}_2$  | Methanamine                      |
| (2) $\text{CH}_3 - \text{CH}_2 - \text{NH}_2$  | Ethanamine                       |
| (3) $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{NH}_2$  | Propan-1-amine                   |
| (4) $\begin{array}{c} \text{CH}_3 \\   \\ \text{CH}_3 - \text{CH} - \text{NH}_2 \end{array}$             | Propan-2-amine                   |
| (5) $\text{CH}_3 - \text{CH}_2 - \text{NH} - \text{CH}_3$  | N-Methylethanamine               |
| (6) $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{NH} - \text{CH}_3$                                  | N-Methylpropan-1-amine           |
| (7) $\begin{array}{c} \text{CH}_3 \\   \\ \text{CH}_3 - \text{CH} - \text{NH} - \text{CH}_3 \end{array}$ | N-Methylpropan-2-amine           |
| (8) $(\text{CH}_3)_3\text{N}$  | N,N-Dimethylmethanamine          |

|  |                                       |
|--|---------------------------------------|
| (9) $(\text{C}_2\text{H}_5)_3\text{N}$   | N,N-Diethylethanamine                 |
| (10) $(\text{C}_2\text{H}_5)_2\text{N} - \text{CH}_3$  | N-Ethyl-N-methylethanamine            |
| (11) $(\text{CH}_3)_2\text{N} - \text{C}_2\text{H}_5$  | N-N-Dimethylethanamine                |
| (12) $\begin{array}{ccccccc} & & \text{CH}_3 & & & & \\ & &   & & 2 & & \\ \text{CH}_3 - & \text{N} - & \text{CH} - & \text{CH}_2 - & \text{CH}_3 \\ & &   & & & & \\ & & \text{CH}_3 & & & & \end{array}$                         | 2-(N,N-dimethyl)butanamine            |
| (13) $\begin{array}{ccccccc} & & \text{CH}_3 & & & & \\ & &   & & 4 & & \\ \text{CH}_3 - & \text{N} - & \text{C} - & \text{CH}_2 - & \text{CH}_3 \\ & &   & & & & \\ & & \text{CH}_3\text{CH}_2 & & 1 & & \text{CH}_3 \end{array}$ | 3-(N,N-dimethyl)-3-methyl-pentanamine |

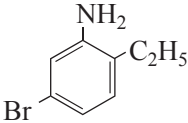
**Q. 21. Write the IUPAC names of the following amines :**

| Compound  | Ans. IUPAC name                     |
|---|-------------------------------------|
| (1) $\begin{array}{c} \text{CH}_3 - \text{CH}_2 - \text{N} - \text{CH}_2 - \text{CH}_2 - \text{CH}_3 \\   \\ \text{CH}_3 \end{array}$       | N-Ethyl,<br>N-methyl propan-1-amine |
| (2) $\begin{array}{c} \text{CH}_3 \\   \\ \text{CH}_3 - \text{C} - \text{CH}_2 - \text{CH}_2 - \text{NH}_2 \\   \\ \text{CH}_3 \end{array}$ | 3,3-Dimethylbutan-1-amine           |
| (3) $\begin{array}{c} \text{CH}_3 - \text{CH} - \text{NH} - \text{CH}_2 - \text{CH}_3 \\   \\ \text{CH}_3 \end{array}$                      | N-Ethyl propan-2-amine              |

**Q. 22. Write IUPAC names of the following amines :**

| Compound  | Ans. IUPAC name     |
|---|---------------------|
| (1) $\text{H}_2\text{N} - (\text{CH}_2)_6 - \text{NH}_2$                                | Hexan-1,6-diamine   |
| (2)  | 2,4-Dimethylaniline |
| (3)  | Benzene-1,4-diamine |

**Q. 23. Give the structures of the following :**

| Compound                                | Ans. Structure   |
|---|--|
| (1) Propan-2-amine                      | $\begin{array}{c} \text{CH}_3 - \text{CH} - \text{CH}_3 \\   \\ \text{NH}_2 \end{array}$   |
| (2) N,N-Dimethylethanamine              | $\text{CH}_3 - \text{CH}_2 - \text{N} \begin{array}{l} \swarrow \text{CH}_3 \\ \searrow \text{CH}_3 \end{array}$   |
| (3) Butan-2-amine                       | $\begin{array}{c} \text{CH}_3 - \text{CH} - \text{CH}_2 - \text{CH}_3 \\   \\ \text{NH}_2 \end{array}$   |
| (4) N,N-Diethylethanamine               | $(\text{C}_2\text{H}_5)_3\text{N}$   |
| (5) 2-Methylpropan-1-amine              | $\begin{array}{c} \text{CH}_3 \\   \\ \text{CH}_3 - \text{CH} - \text{CH}_2 - \text{NH}_2 \end{array}$   |
| (6) 2-Methylpropan-2-amine              | $\begin{array}{c} \text{CH}_3 \\   \\ \text{CH}_3 - \text{C} - \text{CH}_3 \\   \\ \text{NH}_2 \end{array}$  |
| (7) N,N-Dimethyl-2-methylpropan-2-amine | $\begin{array}{c} \text{CH}_3 \\   \\ \text{CH}_3 - \text{C} - \text{N} \begin{array}{l} \swarrow \text{CH}_3 \\ \searrow \text{CH}_3 \end{array} \\   \\ \text{CH}_3 \end{array}$   |
| (8) N-Isopropylpropan-2-amine           | $\begin{array}{c} \text{CH}_3 \qquad \qquad \text{CH}_3 \\   \qquad \qquad \quad   \\ \text{CH}_3 - \text{CH} - \text{NH} - \text{CH} - \text{CH}_3 \end{array}$   |
| (9) N-tert-butyl-2-methyl-2-propanamine | $\begin{array}{c} \text{CH}_3 \qquad \qquad \text{CH}_3 \\   \qquad \qquad \quad   \\ \text{CH}_3 - \text{C} - \text{NH} - \text{C} - \text{CH}_3 \\   \qquad \qquad \quad   \\ \text{CH}_3 \qquad \qquad \text{CH}_3 \end{array}$ |
| (10) 5-Bromo-2-ethylaniline             |   |