

Subject : Chemistry	
Homologus Series, Functional Groups	Total Marks- 40
Test Code: Class X-02-SK	Time: 1.5 hours

[Answer All Questions](#)

Question-1 (1 Mark)

1. Answer the following questions:-
  - a. Write the molecular formula of Ethanol.
  - b. What is the next higher homologue of Methanol?

Questions-2 (2Marks each)

2. Write the IUPAC names of the following:
  - i. HCHO
  - ii. CH<sub>3</sub>CHO
  - iii. CH<sub>3</sub>CH<sub>2</sub>CHO
  - iv. CH<sub>3</sub>CH<sub>2</sub>CH<sub>2</sub>CHO

Questions-3 (3Marks each)

3. Answer the following: -
  - a. Write the IUPAC names of the following: -
    - i. CH<sub>3</sub>COCH<sub>3</sub>
    - ii. CH<sub>3</sub>COCH<sub>2</sub>CH<sub>3</sub>
  - b. Write the structures of the following: -
    - i. Ethanoic Acid
    - ii. Propanoic Acid
4. Answer the following: -
  - a. Write the formula of the functional group present in carboxylic acids.
  - b. Name the functional group present in CH<sub>3</sub>CCH.
  - c. Name the functional groups present in the following compounds.
    - i. CH<sub>3</sub>CHO
    - ii. CH<sub>3</sub>CH<sub>2</sub>COOH
    - iii. CH<sub>3</sub>COCH<sub>3</sub>
    - iv. CH<sub>3</sub>CH<sub>2</sub>CH<sub>2</sub>OH
5. Answer the following: -
  - a. Write the IUPAC name and common name of CH<sub>3</sub>Cl.
  - b. Draw the structure for chlorobutane.
  - c. Draw the structure for bromopentane.
6. Answer the following: -
  - a. Match the formulae in (i) with appropriate names from (ii):
    - i. CH<sub>3</sub>COOH, CH<sub>3</sub>CHO, CH<sub>3</sub>OH
    - ii. Ethanol, Methanol, Ethanal, Ethanoic acid
  - b. Draw the structure of butanoic acid.
  - c. What is the IUPAC name of acetic acid?

Questions ( 5 Marks each)

7. Answer the following: -
  - a. Draw the structures of the following compounds:
    - i. Propanone
    - ii. Butanone
  - b. Which functional group is likely to be present in an organic compound having the molecular formula C<sub>4</sub>H<sub>10</sub>O? Write the formula of the organic compound.
  - c. Write the molecular formula of the third member of the homologous series of carbon compounds with the general formula C<sub>n</sub>H<sub>2n+1</sub>OH.
  - d. How would you name the following compound CH<sub>3</sub>CH<sub>2</sub>Br?

8. You are given an organic compound having the molecular formula  $C_3H_8$ . Give the name and formula of the compound formed :
- When one H atom of  $C_3H_8$  is replaced by a Cl atom.
  - When one H atom of  $C_3H_8$  is replaced by a OH group.
  - When one H atom of  $C_3H_8$  is replaced by a CHO group.
  - When one H atom of  $C_3H_8$  is replaced by a COOH group.
  - When two H atoms joined to the middle carbon atom of  $C_3H_8$  are replaced by one O atom.
9. A colourless organic liquid X of molecular formula  $C_2H_4O_2$  turns blue litmus red. Another colourless organic liquid Y of molecular formula  $C_3H_6O$  has no action on any litmus but it is used as a nail polish remover. Yet another colourless organic liquid Z of molecular formula  $C_2H_6O$  has also no action on litmus but it is used in tincture of iodine.
- Name the liquid X. To which homologous series does it belong? Give the name of another member of this homologous series.
  - Name the liquid Y. To which homologous series does it belong? Give the name of another member of this homologous series.
  - Can you name an organic compound having the same molecular formula as liquid Y but which belongs to a different homologous series? What is this homologous series?
  - Name the liquid Z. To which homologous series does it belong? Give the name of another member of this homologous series.
10. Three organic compounds A, B and C have the following molecular formulae:
- $C_4H_8O_2$
  - $C_4H_{10}O$
  - $C_4H_8O$
- Which compound contains an alcohol group? Write its name and structural formula.
  - Which compound contains a carboxyl group? Write its name and structural formula.
  - Which molecular formula can represent an aldehyde as well as a ketone? Write the name and structural formulae of the aldehyde and ketone represented by this molecular formula.
11. Answer the following.
- Give the names and structural formulae of the next two higher Homologues of Methane.
  - The molecular formula of a Hydrocarbon is  $C_{10}H_{18}$ . Name its Homologous series.
  - Select the hydrocarbons which are members of the same Homologous series. Give the names of each series.  
 $C_5H_{10}$ ,  $C_3H_8$ ,  $C_6H_{10}$ ,  $C_4H_{10}$ ,  $C_7H_{12}$ ,  $C_8H_{16}$ .

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