

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_3CHO
 - iii. $\text{CH}_3\text{CH}_2\text{CHO}$
 - iv. $\text{CH}_3\text{CH}_2\text{CH}_2\text{CHO}$

Questions-3 (3Marks each)

3. Answer the following: -
 - a. Write the IUPAC names of the following: -
 - i. CH_3COCH_3
 - ii. $\text{CH}_3\text{COCH}_2\text{CH}_3$
 - 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_3CCH .
 - c. Name the functional groups present in the following compounds.
 - i. CH_3CHO
 - ii. $\text{CH}_3\text{CH}_2\text{COOH}$
 - iii. CH_3COCH_3
 - iv. $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$
5. Answer the following: -
 - a. Write the IUPAC name and common name of CH_3Cl .
 - 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_3COOH , CH_3CHO , CH_3OH
 - 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 $\text{C}_4\text{H}_{10}\text{O}$? 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 $\text{C}_n\text{H}_{2n+1}\text{OH}$.
 - d. How would you name the following compound $\text{CH}_3\text{CH}_2\text{Br}$?

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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