

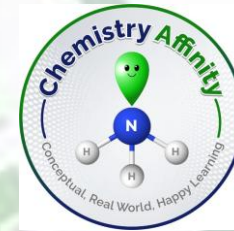


Worksheet-3

Fundamental Concepts of Organic Chemistry


**Designed by
Dr. Anuradha Mukherjee**

Worksheet-3 covers



- 1. IUPAC nomenclature for various compounds**
- 2. Drawing structures from IUPAC nomenclature and condensed form of organic molecules**
- 3. Finding out sigma and pi bonds and hybridization**
- 4. Identification of functional groups from organic molecules**

(1) A neutral carbon, (ii) a positively charged oxygen, (iii) A negatively charged nitrogen (iv) a positively charged carbon

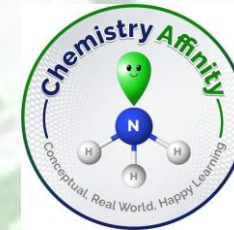


$\text{--}\ddot{\text{O}}\text{--}$ or $\ddot{\text{O}}\text{=}$ [neutral]
 $\text{--}\overset{+}{\underset{\cdot\cdot}{\text{O}}}\text{--}$ (positively charged)

$\text{---}\ddot{\text{N}}\text{---}$ or $\text{---}\ddot{\text{N}}\text{---}$ or :N: (neutral)
 $\text{---}\ddot{\text{N}}\text{---}$ (negatively charged)

$\overset{+}{\underset{|}{\text{C}}}-$ (+) very charged carbon

Check your learning

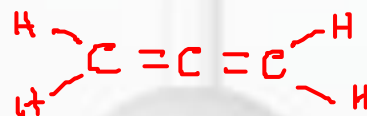


**1. Which one of the following does not have sp^2 hybridized carbon?
(i) acetone, (ii) acetonitrile, (iii) acetamide, (iv) acetic acid**

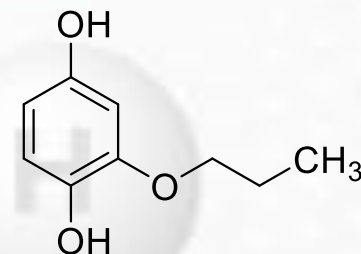
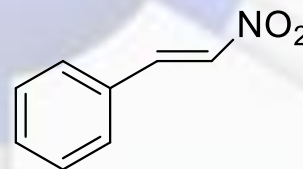
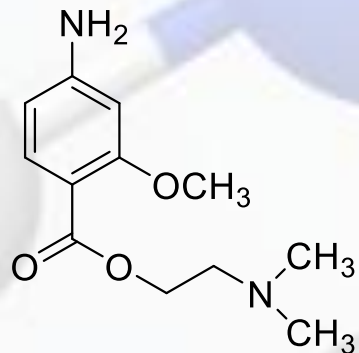
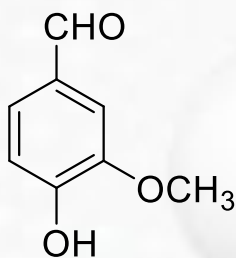
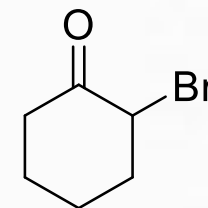
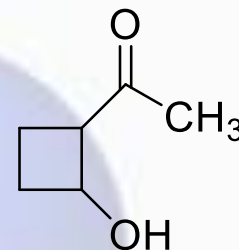
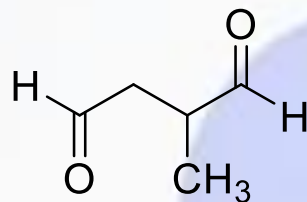
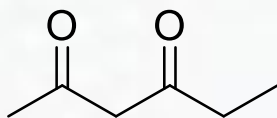
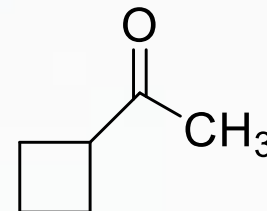
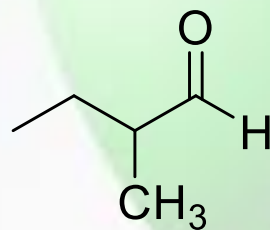
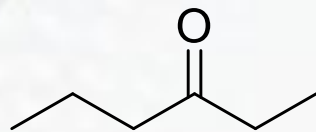
2. Which of the following molecules has two sigma and two pi bonds?

(i) C_2H_4 , (ii) N_2F_2 , (iii) $C_2H_2Cl_2$, (iv) HCN

3. Following molecule is known as allene (C_3H_4) What are the hybridization of carbon in this molecule? How many sigma and pi bonds are present here?

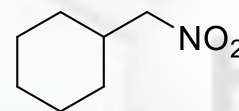
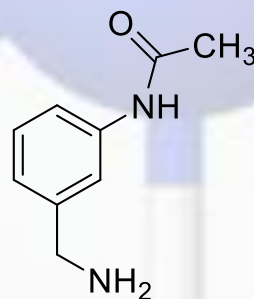
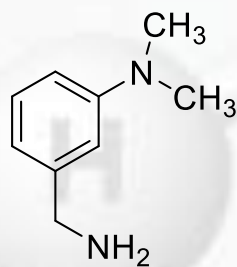
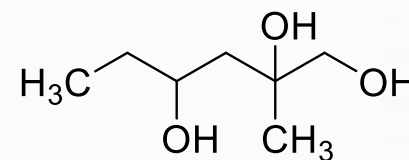
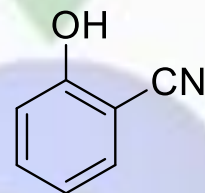
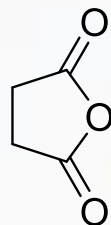
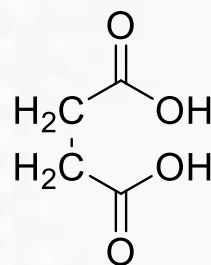
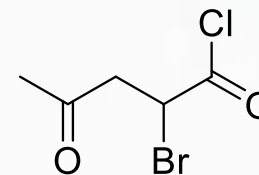
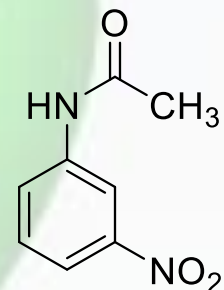
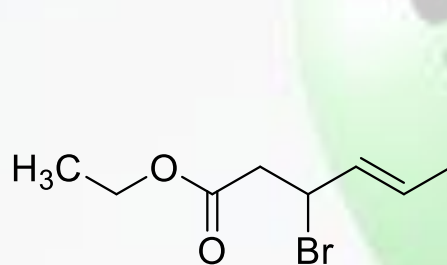
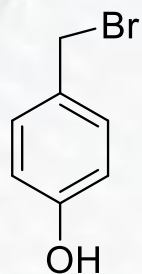


4. Identify functional groups



Continuation...

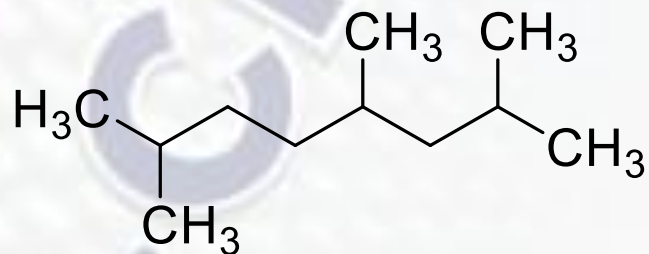
4. Identify functional groups



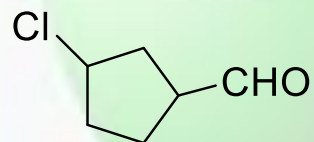
5. Write down IUPAC Nomenclature



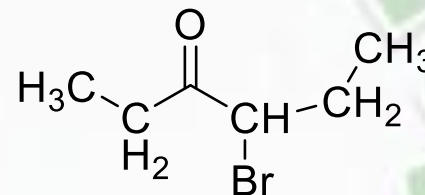
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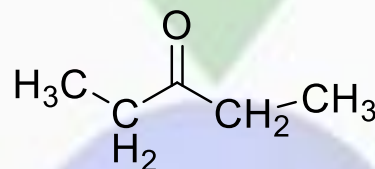
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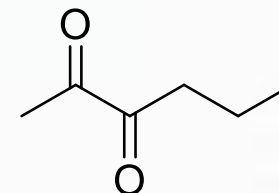
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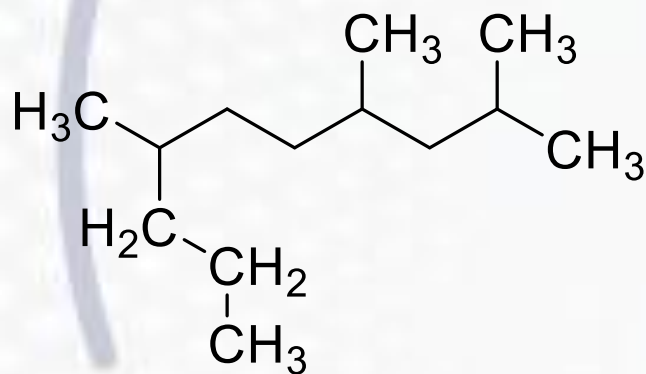
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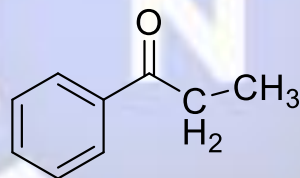
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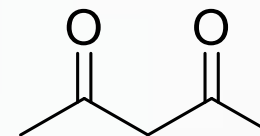
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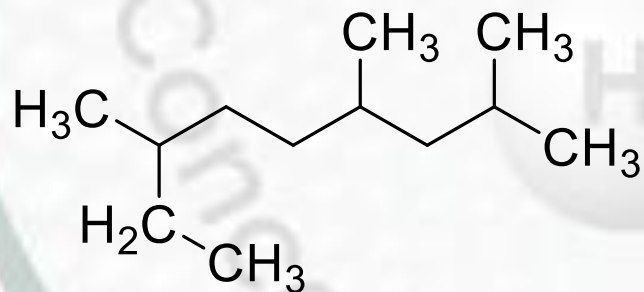
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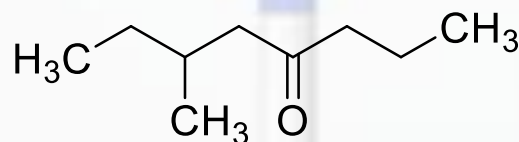
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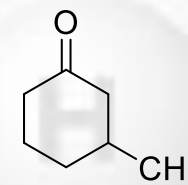
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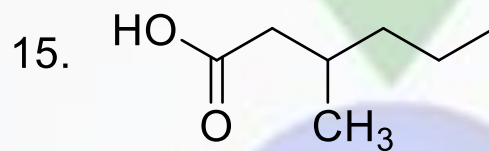
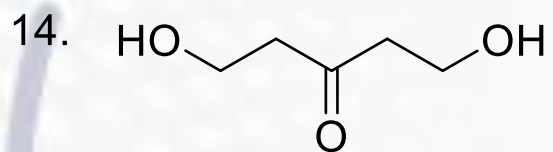
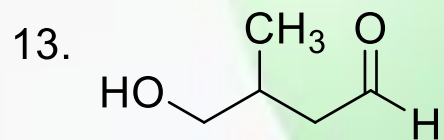
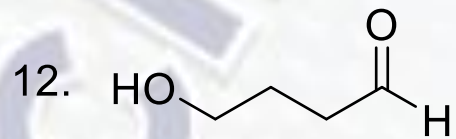
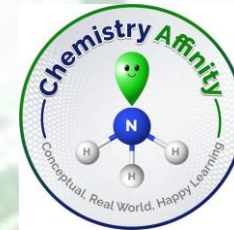
7.



11.



5. Write down IUPAC Nomenclature





6. Draw structures and write down IUPAC nomenclature

1. $(\text{CH}_3)_2\text{C}(\text{C}_2\text{H}_5)_2$
2. $(\text{CH}_3)_2\text{CHCH}_2\text{CH}(\text{C}_2\text{H}_5)\text{C}(\text{CH}_3)_3$
3. $(\text{CH}_3)_2\text{C}=\text{CHCH}_2\text{C}(\text{CH}_3)_3$
4. $\text{CH}_2=\text{C}(\text{CH}_3)\text{CH}(\text{CH}_3)\text{C}(\text{C}_2\text{H}_5)=\text{CH}_2$
5. $(\text{CH}_3\text{CH}_2\text{CH}_2)_2\text{C}=\text{CH}_2$
6. $(\text{C}_2\text{H}_5)_2\text{C}=\text{CHCH}(\text{CH}_3)_2$

7. From IUPAC nomenclature draw molecules



A. 2-methylpropane-2-ol

B. 4-bromo-2,4-dimethylpentane-2-ol

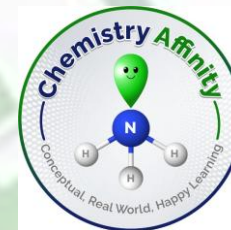
C. 3. 2-methylpentan-2-ol

D. prop-2-yne-1-ol

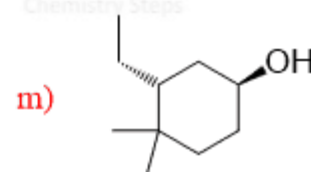
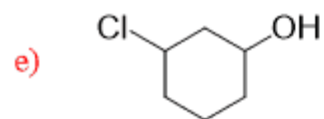
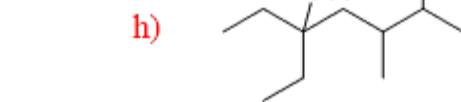
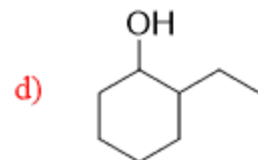
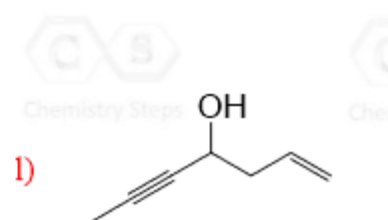
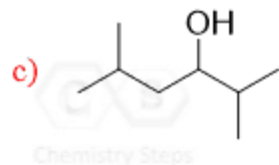
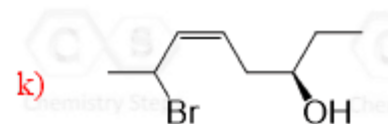
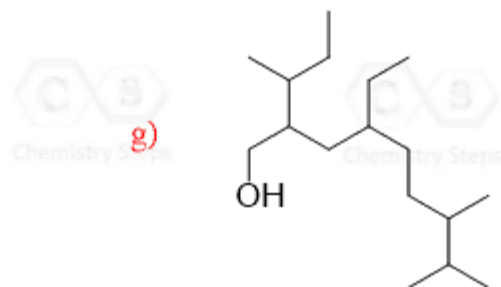
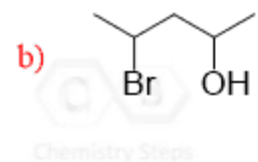
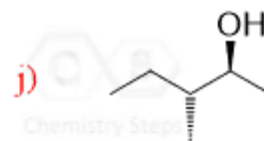
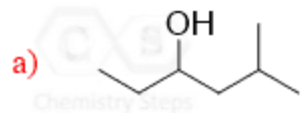
E. 3-isopropoxy pentane

F. 1-(4-chlorophenoxy)-3-methylbenzene

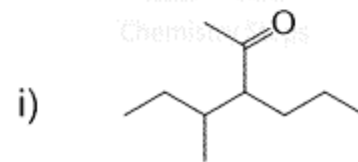
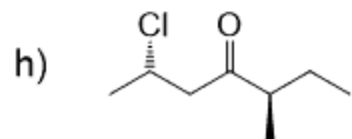
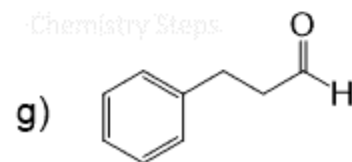
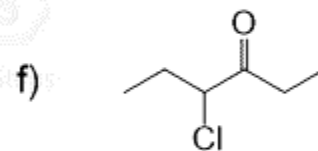
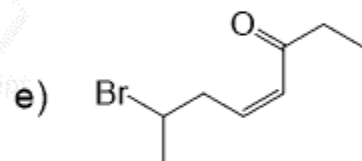
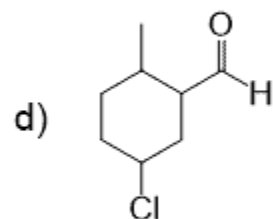
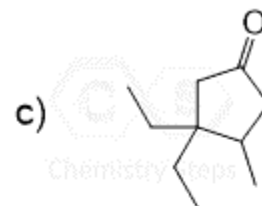
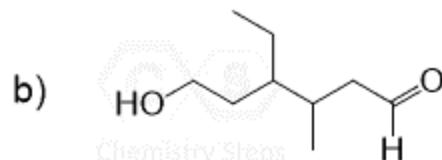
G. 2-(tert-butoxy)-2-methylpropane



8. Write down IUPAC of various alcohols



9. Write down IUPAC of various carbonyl compounds





All the best