

ORGANIC - (1)

① What is catenation?

Ans The tendency of carbon to link with other carbon atoms and form long straight, branched or cyclic chains is called catenation

② Write the structures of the functional group and the IUPAC (secondary suffix) for:

- a) Alcohol $\xrightarrow{\text{Ans}}$ $-\text{O}-\text{H}$ ol
b) Aldehyde \longrightarrow $-\overset{\text{O}}{\parallel}{\text{C}}-\text{H}$ al
c) Ketone \longrightarrow $-\text{C}-\overset{\text{O}}{\parallel}{\text{C}}-\text{C}-$ one
d) Carboxylic Acid \longrightarrow $-\overset{\text{O}}{\parallel}{\text{C}}-\text{O}-\text{H}$ oic acid

③ Draw the structures of:

- i) ethylene ii) Acetylene

Ans i) ethylene = ethene = $\begin{array}{c} \text{H} \quad \text{H} \\ | \quad | \\ \text{H}-\text{C}=\text{C}-\text{H} \end{array}$ C_2H_4

ii) Acetylene = ethyne = $\text{H}-\text{C}\equiv\text{C}-\text{H}$ C_2H_2

④ What are saturated and unsaturated hydrocarbon?

Ans Saturated \rightarrow Compounds with C-C single Bond
(Alkane) formula $(\text{C}_n\text{H}_{2n+2})$ $n=1,2,3$

ex $\text{CH}_4, \text{C}_2\text{H}_6, \text{C}_3\text{H}_8$
Methane ethane propane

Unsaturated \rightarrow Compounds with C-C double or triple Bond

(Alkene or Alkyne)

C_nH_{2n}

$\text{C}_n\text{H}_{2n-2}$

$n=2,3,4$

ethene, ethylene, ethyne, acetylene

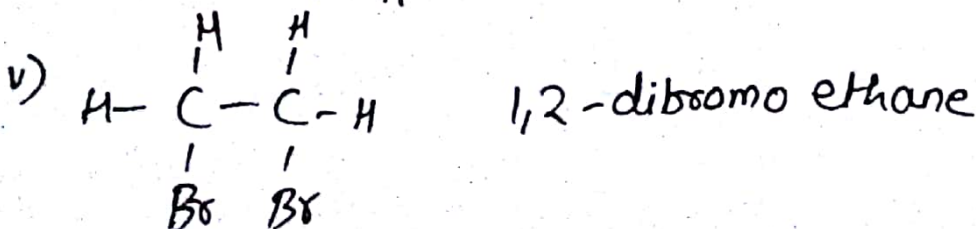
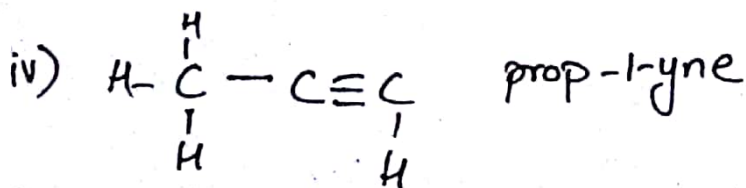
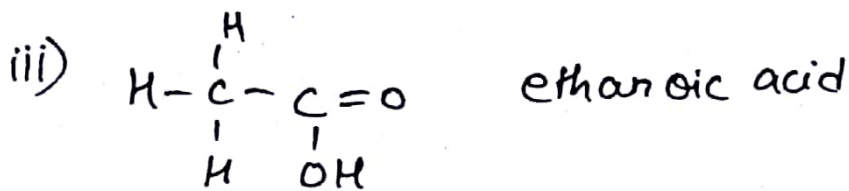
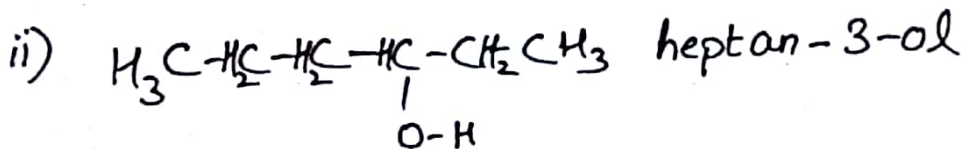
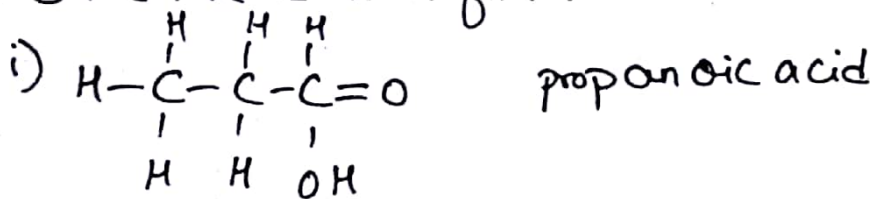
How to write IUPAC name?

VIDEO RECOMMENDED!!! IUPAC → Then proceed.

⑧ IUPAC = Name of Substituents with positions (in alphabetical order) + Root word (no. of C in main chain) + Primary Suffix (type of C-C Bond) + Sec Suffix (Function Group)

→ Cl	Chloro	1 → meth	—	ane	(See Q2)
→ Br	Bromo	2 → eth	=	ene	
→ F	Fluoro	3 → prop	≡	yne	
→ I	Iodo	4 → but			
→ NO ₂	Nitro	5 → pent			
→ CH ₃	methyl	6 → hex			
→ C ₂ H ₅	ethyl	7 → hept			
		8 → oct			
		9 → non			

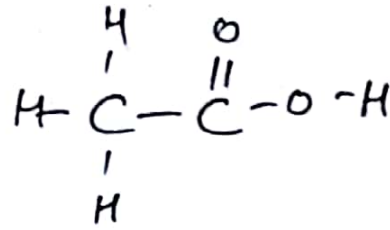
⑧ Give the IUPAC for:-



Draw the structures of

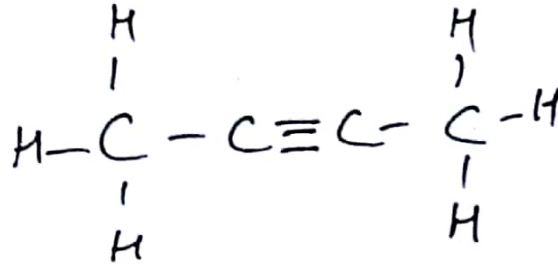
i) Ethanoic acid

Ans Ethanoic acid
↓ ↓
2C Single Bond
COOH group
C-C



ii) But-2-yne

Ans ↓ ↓
4C ≡ at 2C



iii) ethyne

Ans ↓ ↓
2C ≡

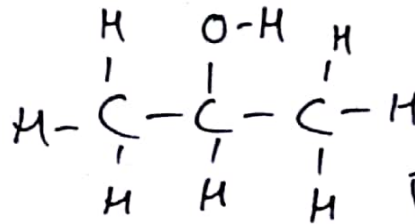


Note: C has 4 valency, so put H to make it 4

VIDEO RECOMMENDED

iv) 2-propanol

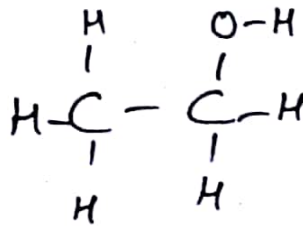
Ans ↓ ↓ → OH group at 2
3C Single Bond
C-C



Jobhi
C Ki valency
Bache uspe
H lagao

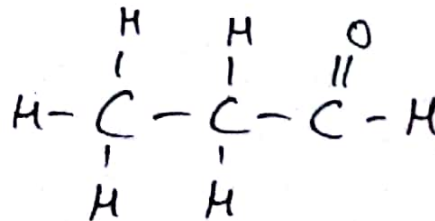
v) ethanol

↓ ↓ → OH group
2C Single bond
C-C



vi) 1-propanal

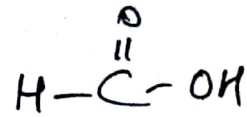
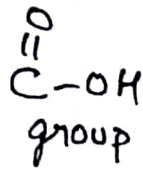
↓ ↓ → C=O group at 1st position
3C Single Bond
C-C



vii) ethanoic acid (same as i)

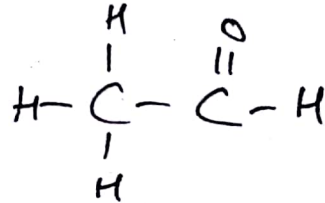
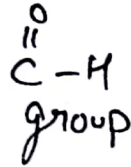
methanoic acid

Ans
↓ ↓
1C single
Bond

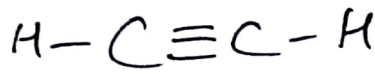


ix) Ethanal

Ans
↓ ↓
2C single
Bond
C-C



x) Ethyne

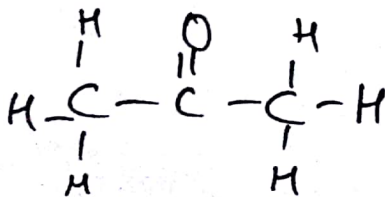


Ans
↓ ↓
2C ≡

xi) Acetone

Note: Common name for Propanone

↓ ↓
3C single
Bond
C-C

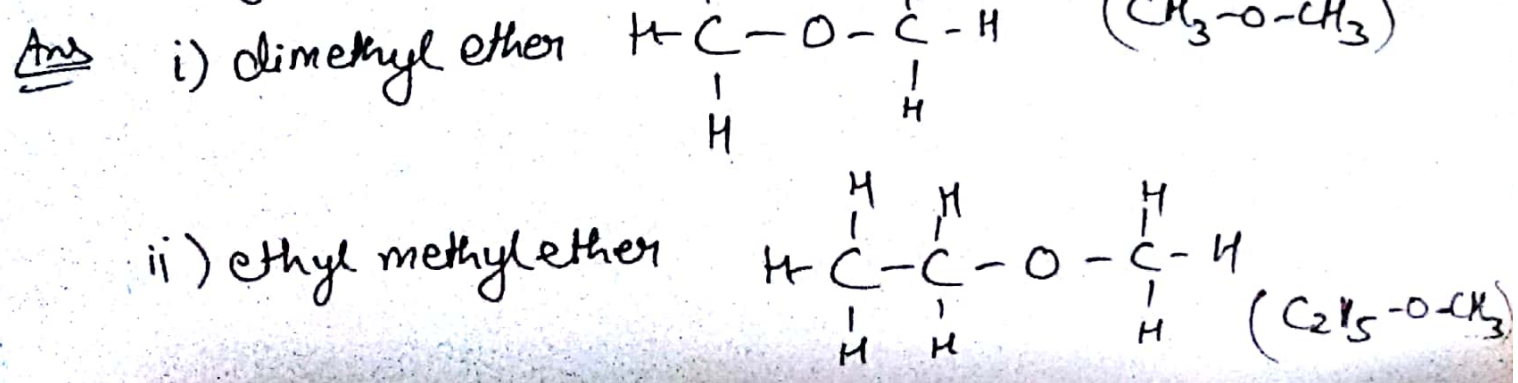


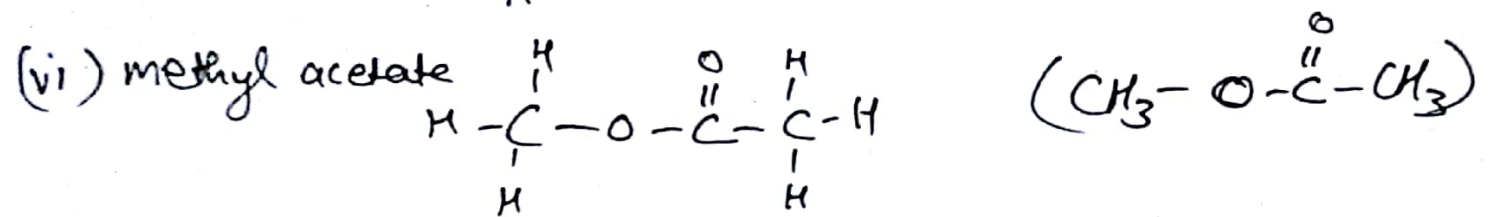
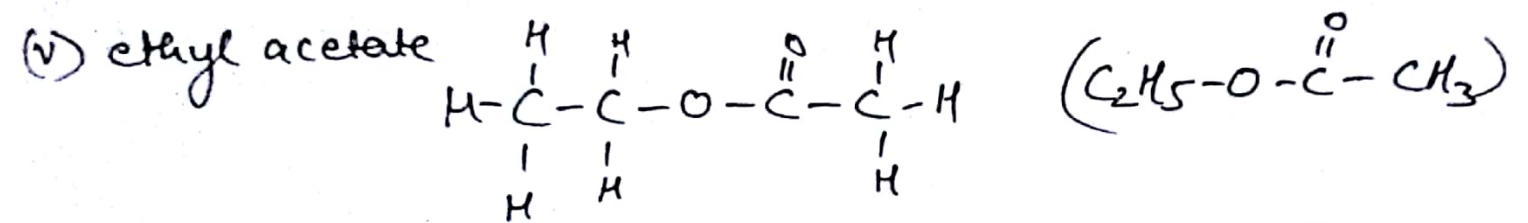
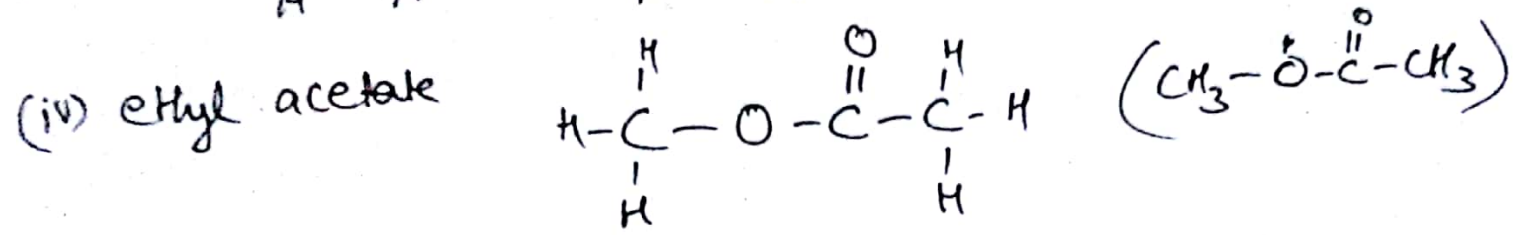
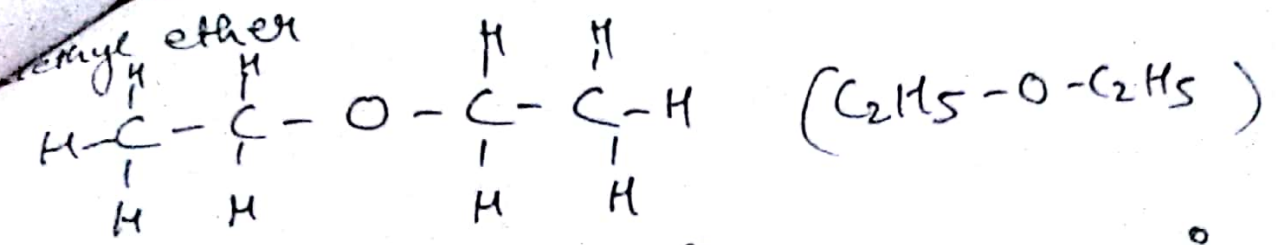
Write the common name of following with IUPAC name

- i) C_2H_4 $\begin{array}{c} H \\ | \\ H-C=C-H \\ | \\ H \end{array}$ IUPAC ethene COMMON ethylene
- ii) C_2H_2 $H-C \equiv C-H$ ethyne acetylene
- iii) CH_3OH $\begin{array}{c} H \\ | \\ H-C-OH \\ | \\ H \end{array}$ methanol methyl alcohol
- iv) C_2H_5OH $\begin{array}{c} H & H \\ | & | \\ H-C & -C-OH \\ | & | \\ H & H \end{array}$ ethanol ethyl alcohol
- v) $HCHO$ $\begin{array}{c} O \\ || \\ H-C-H \end{array}$ methanal formaldehyde
- vi) CH_3CHO $\begin{array}{c} H & O \\ | & || \\ H-C & -C-H \\ | \\ H \end{array}$ ethanal acetaldehyde
- vii) CH_3COCH_3 $\begin{array}{c} H & O & H \\ | & || & | \\ H-C & -C & -C-H \\ | & & | \\ H & & H \end{array}$ propanone acetone
- viii) $HCOOH$ $\begin{array}{c} O \\ || \\ H-C-O-H \end{array}$ methanoic acid formic acid
- ix) CH_3COOH $\begin{array}{c} H & O \\ | & || \\ H-C & -C-OH \\ | \\ H \end{array}$ ethanoic acid acetic acid

ii) Draw the structures of following (VIDEO RECOMMENDED)

- i) dimethyl ether ii) ethyl methyl ether
 iii) diethyl ether iv) ethyl acetate v) methyl acetate
 vi) ethyl ethanoate.





(vii) ethyl ethanoate (acetate) same as (iv) above.

(12) Draw the structures of :-
 a) 2-methyl propane b) ethanoic acid c) Butan-2-ol

Ans see Q 9

(13) What are homologous series?

Ans Homologous series are series of chemical compounds having same functional group but increasing CH_2 in each member.

	C_nH_{2n}	$\text{C}_n\text{H}_{2n-2}$	$\text{C}_n\text{H}_{2n+1}\text{OH}$
<u>ex</u> Alkane	Alkene	Alkyne	Alcohol
$\text{C}_n\text{H}_{2n+2}$	$\text{CH}_2=\text{CH}_2$	C_2H_2	CH_3OH
C_2H_6	C_3H_6	C_3H_4	$\text{C}_2\text{H}_5\text{OH}$
C_3H_8	C_4H_8	C_4H_6	$\text{C}_3\text{H}_7\text{OH}$
C_4H_{10}	C_5H_{10}		