



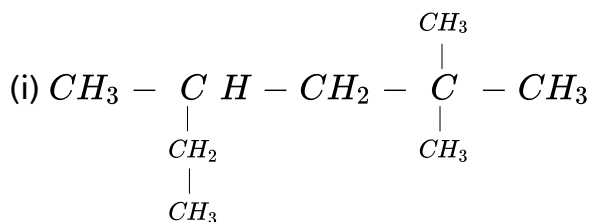
## CHEMISTRY

### BOOKS - CENGAGE CHEMISTRY (ENGLISH)

# CLASSIFICATION AND NOMENCLATURE OF ORGANIC COMPOUNDS

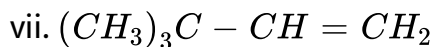
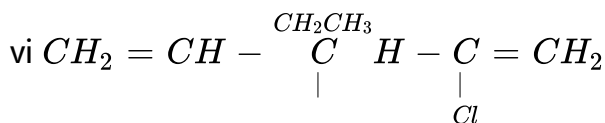
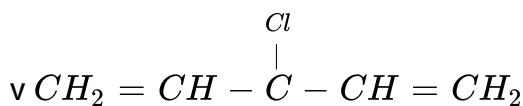
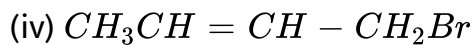
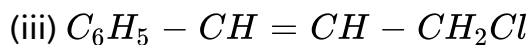
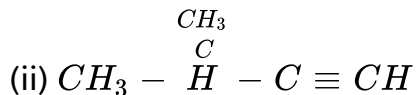
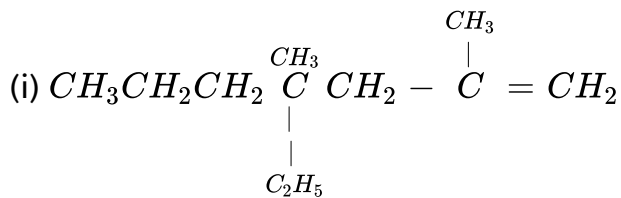
#### Illustration

1. Given the *IUPAC* of the following alkanes:

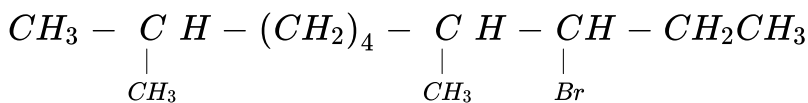
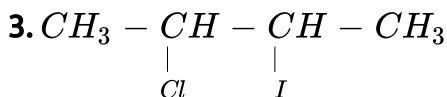


Watch Video Solution

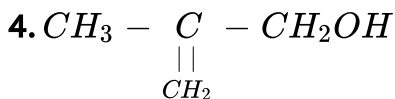
2. Given the *IUPAC* names of the following compounds:



Watch Video Solution

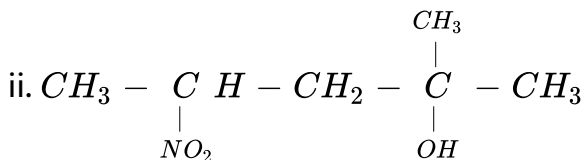
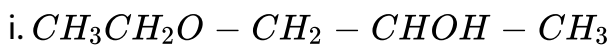


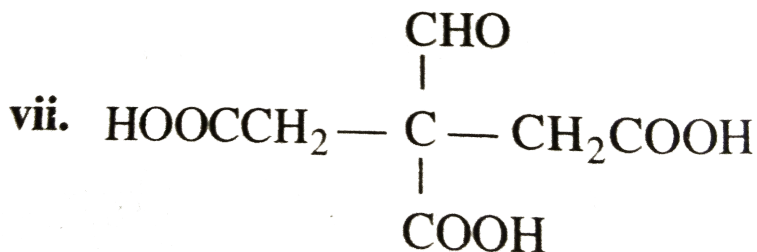
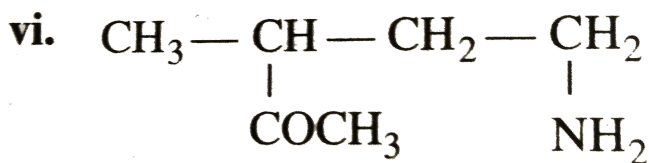
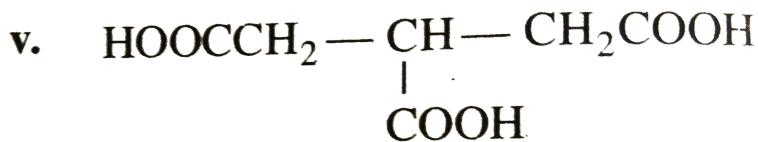
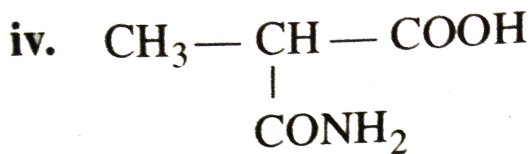
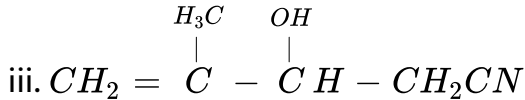
 [Watch Video Solution](#)



 [Watch Video Solution](#)

5. Give the *IUPAC* names for the following polyfunctional compounds:

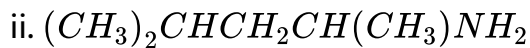




 Watch Video Solution

6. a. Rewrite the following structural formula in bond line notation.

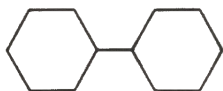




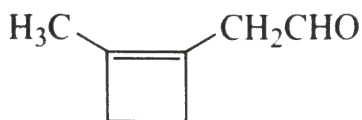
 Watch Video Solution

7. Given the *IUPAC* names of the following compounds:

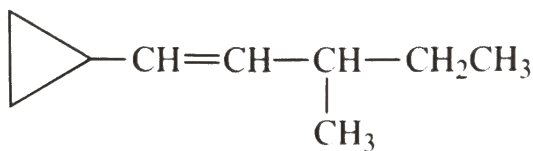
i.



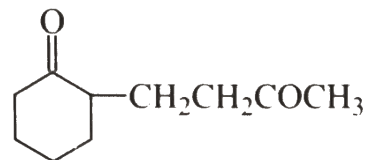
ii.



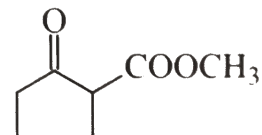
iii.



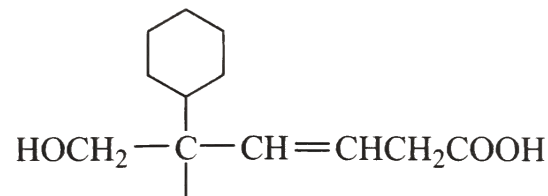
iv.

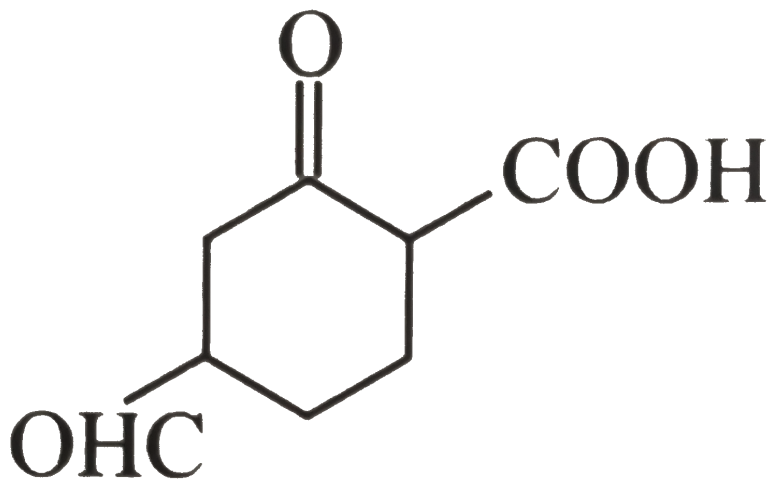
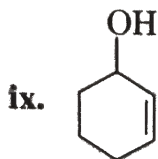
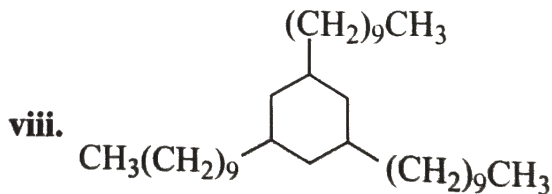
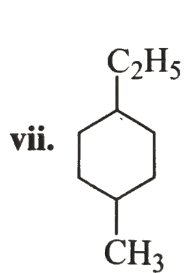


v.



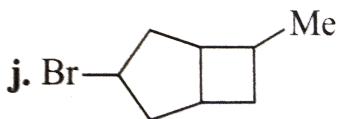
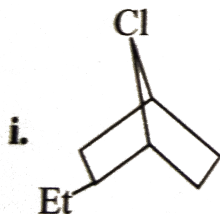
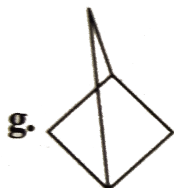
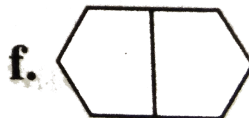
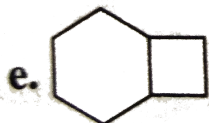
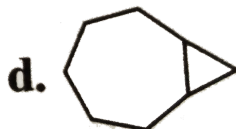
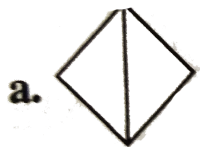
vi.





 Watch Video Solution

8. Give the *IUPAC* names of the following compounds :

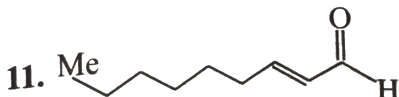
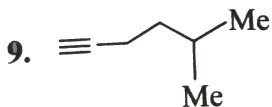
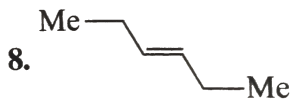
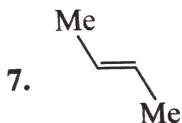
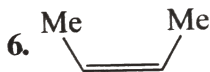
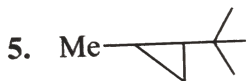
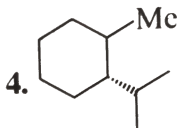
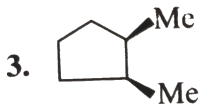
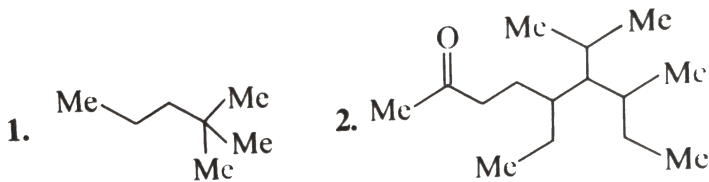


 [View Text Solution](#)

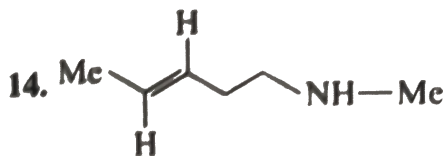
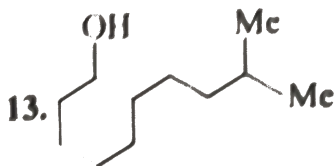
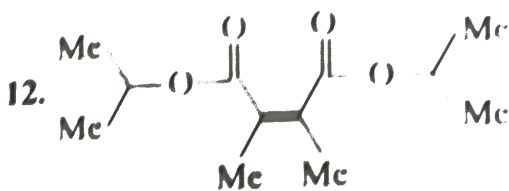
Solved Example

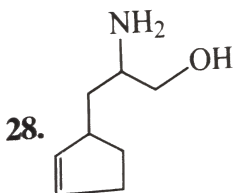
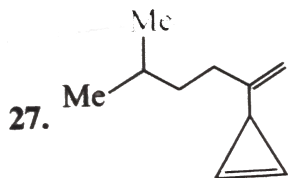
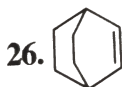
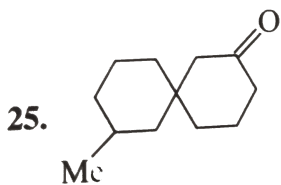
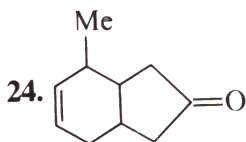
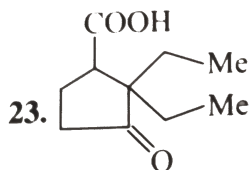
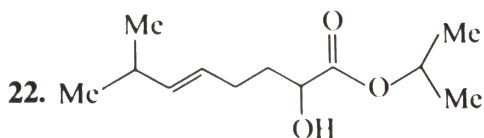
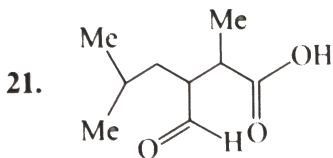
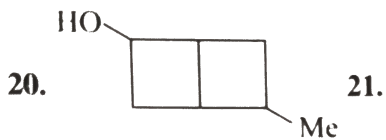
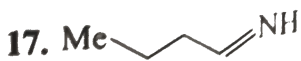
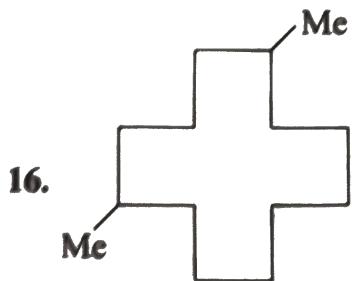
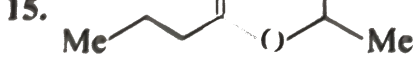


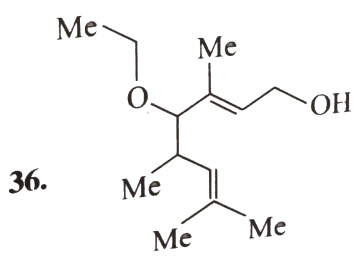
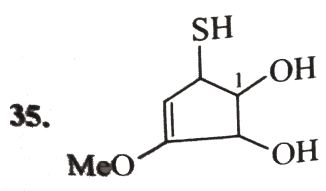
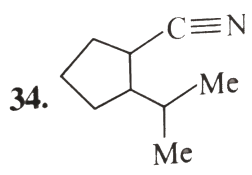
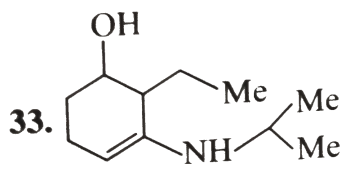
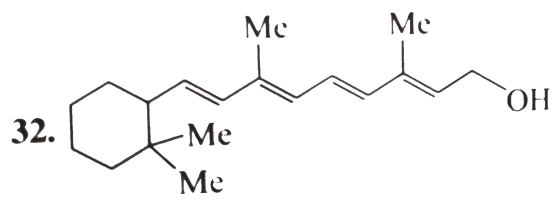
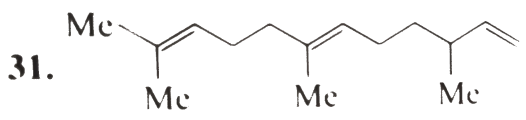
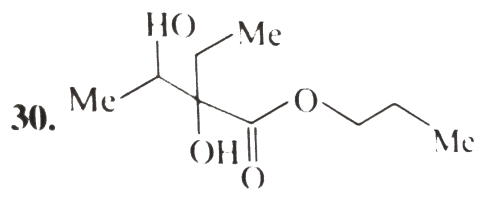
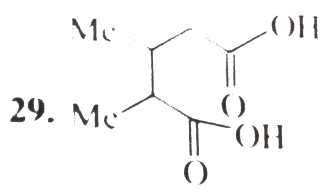




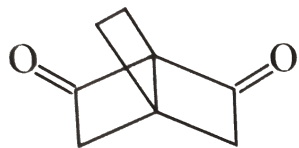
1.



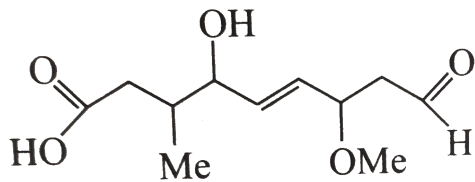




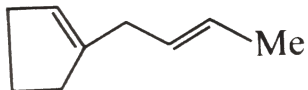
37.



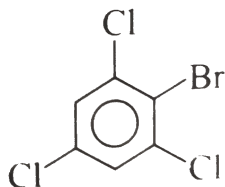
38.



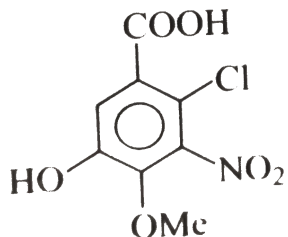
39.



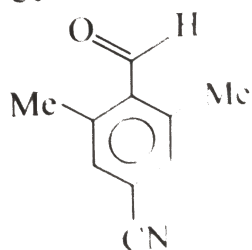
40.



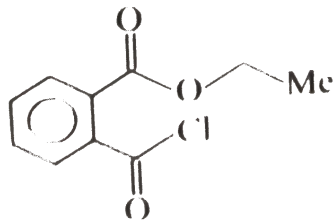
41.



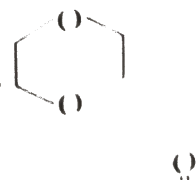
42.

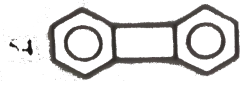
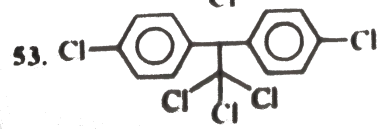
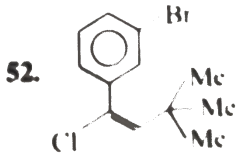
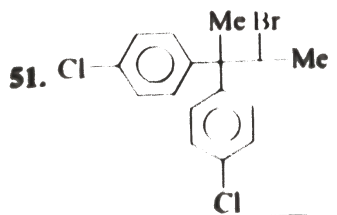
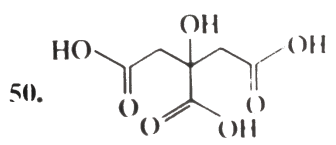
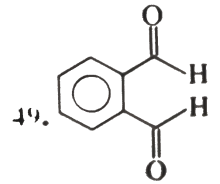
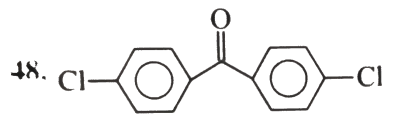
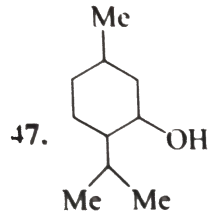
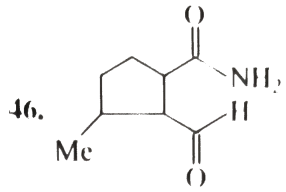
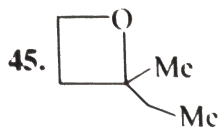


43.



44.





 [View Text Solution](#)

2. Draw Structure of Benzonitrile

 [Watch Video Solution](#)

3. Write the correct name of the following :

1. Pent-1-yn-5-ol

 [Watch Video Solution](#)

4. Write the structure of cetyldimethylammonium bromide, a compound with antiseptic property and also used as a cationic detergent.

Predict its solubility behavior in water and diethyl ether.

b. Write structure of cetyltrimethylammonium bromide, a popular cationic detergent used in hair conditioners

 [Watch Video Solution](#)

5. Write the structure (s) of the simplest alkane (s), with fewest number of  $C$  atoms, possessing  $1^\circ$ ,  $2^\circ$ ,  $3^\circ$ , and  $4^\circ C$  atoms.

 Watch Video Solution

## Exercises

1. write the structural formula for each of the following

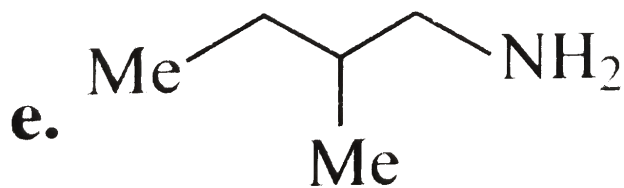
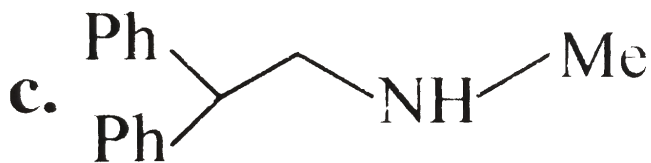
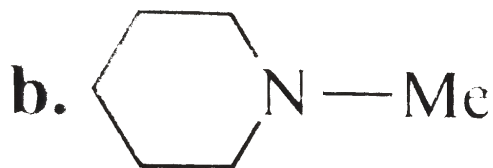
a. A  $3^\circ$  amine with the formula  $C_3H_9N$ .

b. Three ethers with the formula  $C_4H_{10}O$ .

c. A  $3^\circ$  alcohol with the formula  $C_4H_8O$ .

 Watch Video Solution

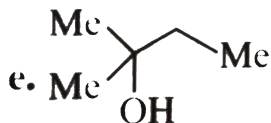
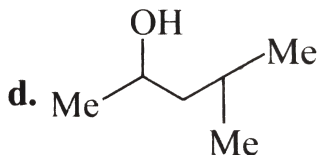
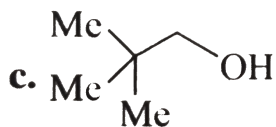
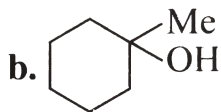
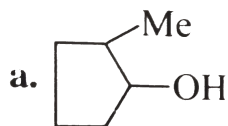
2. Indicate the following as 1°, 2°, and 3° amine:



 Watch Video Solution



3. Indicate the following as  $1^\circ$ ,  $2^\circ$ , and  $3^\circ$



 [Watch Video Solution](#)

4. Write the structural formula for seven compounds with the formula  $C_3H_6O$  and identify the functional groups.

 [Watch Video Solution](#)

5. There are seven isomeric compounds with the formula  $C_4H_{10}O$   
Write their structures and identify their functional groups



Watch Video Solution

6. There are four alkyl chlorides with the formula  $C_4H_9Cl$ . Write their structures and identify them as  $1^\circ$ ,  $2^\circ$ , and  $3^\circ$  alkyl chlorides



Watch Video Solution

7. There are four amides with the formula  $C_3H_7NO$ .

Write their structures.

Identify the amide which has lower melting point and boiling point than the other three.



Watch Video Solution

8. Write the *IUPAC* name of the compound (A) which is a 2-methyl branched alkane having a molecular mass of 254. This

compound is a sex-attractant and is isolated from female tiger moths.

 [Watch Video Solution](#)

9. Write the *IUPAC* name of the compound (*A*) which is a 2-methyl alkane with molecular mass of 72.

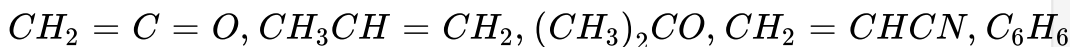
 [Watch Video Solution](#)

10. Write the *IUPAC* name of the compound (*A*) in which the molar ratios of *C*, *H*, and *O* of equal having a molecular mass of 58

 [Watch Video Solution](#)

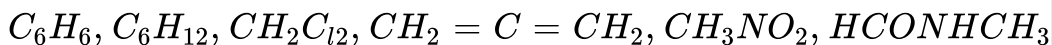
Concept Application Type

1. What are hybridisation states of each carbon atom in the following compounds ?



 [Watch Video Solution](#)

2. Indicate the  $\sigma$  and  $\pi$  bonds in the following molecules :

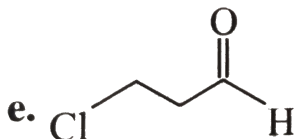
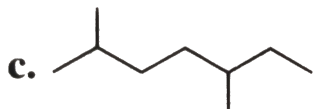
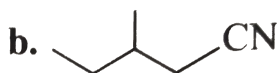
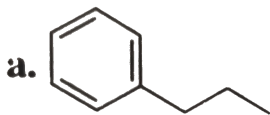


 [Watch Video Solution](#)

3. Write bond line formulas for : Isopropyl alcohol, 2,3-Dimethylbutanal, Heptan-4-one.

 [Watch Video Solution](#)

4. Give the *IUPAC* names of the following compounds



a.

 [Watch Video Solution](#)

5. Which of the following represents the correct I.U.P.A.C. name for the compounds concerned?

2,2-dimethylpentane or 2-dimethylpentane

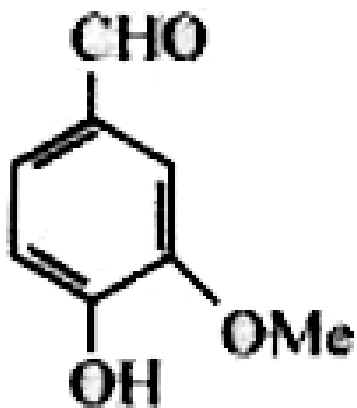
 [Watch Video Solution](#)

6. Draw formulas for the first five members of each homologous series beginning with the following compounds. (a)  $H-COOH$  (b)  $CH_3COCH_3$  (c)  $H-CH=CH_2$

 [Watch Video Solution](#)

7. Identify the functional groups in the following compounds

(a)

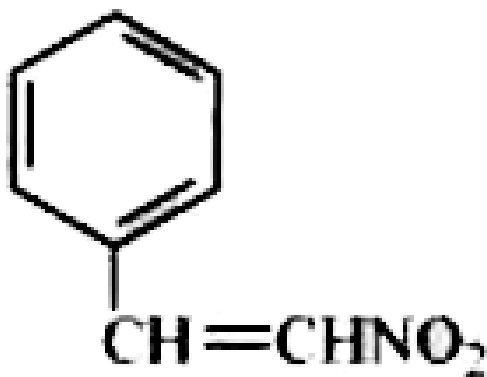


(b)





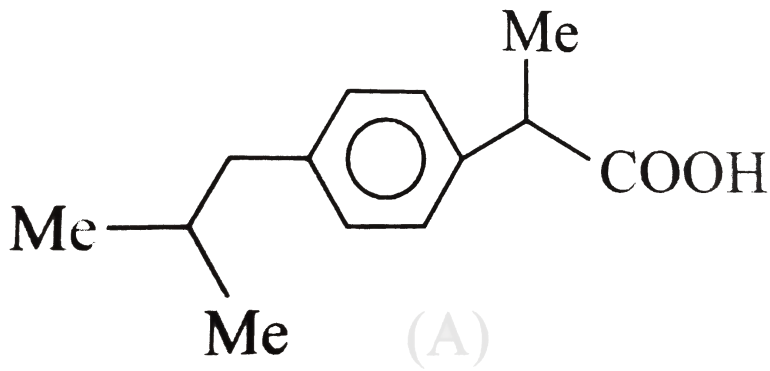
(c)



[▶ Watch Video Solution](#)

Linked Comprehension Type

1. The analgesic drug ibuprofen (*A*) is chiral and exists in (+) and (-) forms. One enantiomer is physiologically active, while the other is inactive. The other is inactive. The structure of ibuprofen is given below.



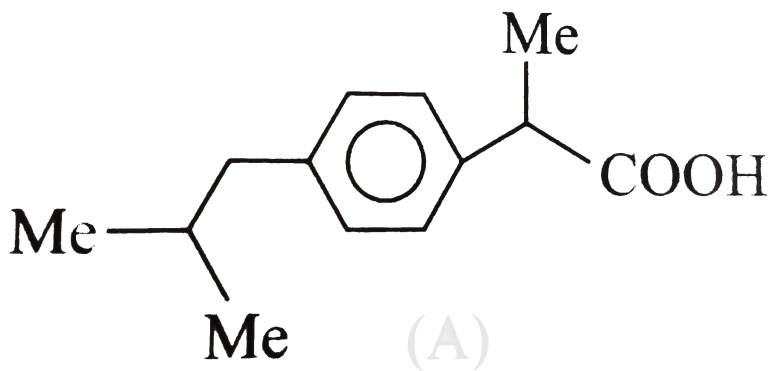
The principal functional group in (*A*) is:

- A. Phenyl
- B.  $-COOH$  group
- C. Isopropyl
- D. Both (a) and (b)

**Answer: B**



2. The analgesic drug ibuprofen (*A*) is chiral and exists in (+) and (-) forms. One enantiomer is physiologically active, while the other is inactive. The other is inactive. The structure of ibuprofen is given below.



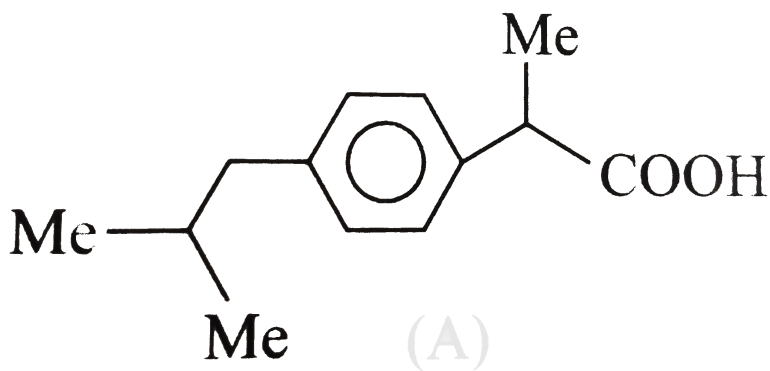
The *IUPAC* name of (*A*) is:

- A. 3-(p-Isobutyl phenyl) propanoic acid
- B. 2-(p-Isobutyl phenyl) propanoic acid
- C. 3-(p-sec-Butyl phenyl) propanoic acid
- D. 2-(p-sec-Butyl phenyl) propanoic acid

Answer: B

 Watch Video Solution

3. The analgesic drug ibuprofen (*A*) is chiral and exists in (+) and (-) forms. One enantiomer is physiologically active, while the other is inactive. The other is inactive. The structure of ibuprofen is given below.



The number of  $\pi$  - bonds in (*A*) is :

A. 2

B. 3

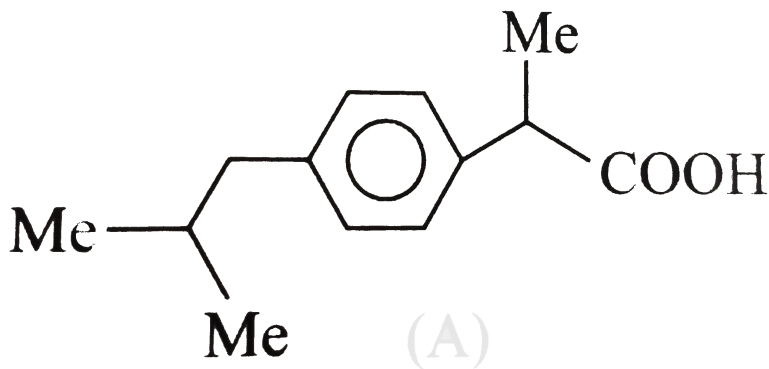
C. 4

D. 5

Answer: C

 Watch Video Solution

4. The analgesic drug ibuprofen (*A*) is chiral and exists in (+) and (-) forms. One enantiomer is physiologically active, while the other is inactive. The other is inactive. The structure of ibuprofen is given below.



The number of  $\sigma$ -bonds in (*A*) is:

A. 30

B. 31

C. 32

D. 33

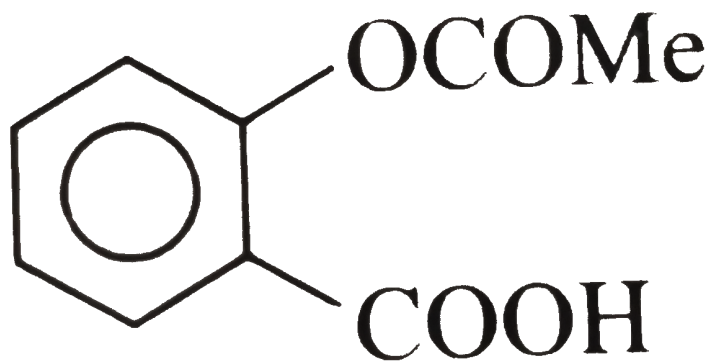
**Answer: D**



**Watch Video Solution**

5. Aspirin is widely used as an analgesic drug. It is optically inactive.

The structure of aspirin is:



The principal functional group in (A) is :

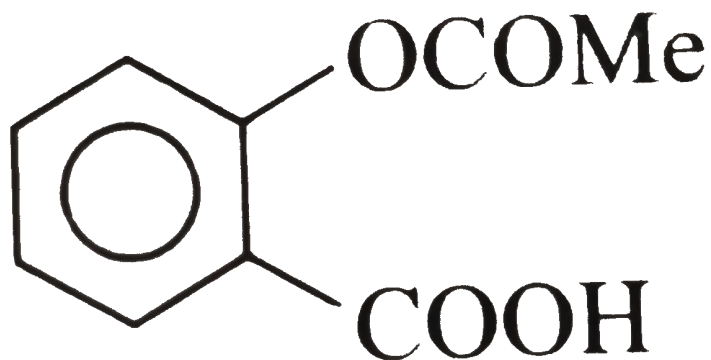
- A. Phenyl
- B.  $\text{COOH}$
- C. Ester
- D. All

**Answer: B**

 [Watch Video Solution](#)

6. Aspirin is widely used as an analgesic drug. It is optically inactive.

The structure of aspirin is:



Which of the following is not the correct name for aspirin?

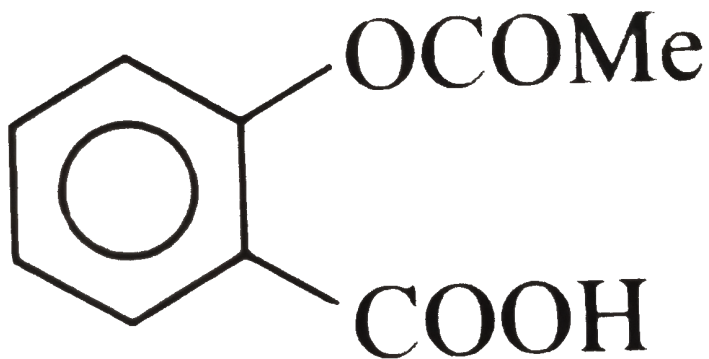
- A. 2-Acetyl salicylic acid
- B. 2-Acetoxy benzoic acid
- C. 2-Acetoxy salicylic acid
- D. None

**Answer: C**

 [Watch Video Solution](#)

7. Aspirin is widely used as an analgesic drug. It is optically inactive.

The structure of aspirin is:



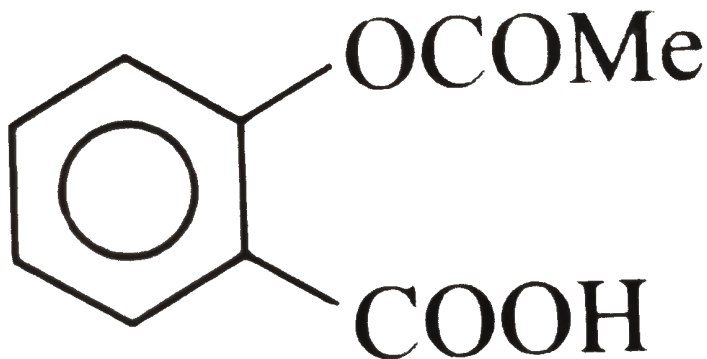
The number of  $\pi$  - bonds in (A) is:

- A. 3
- B. 4
- C. 5
- D. 6

**Answer: C**

8. Aspirin is widely used as an analgesic drug. It is optically inactive.

The structure of aspirin is:



The number of  $\sigma$  - bonds in (A) is:

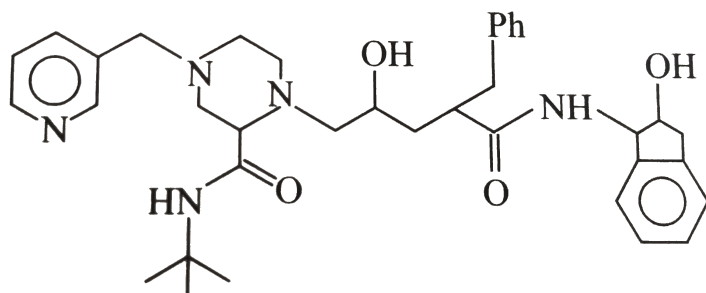
- A. 19
- B. 20
- C. 21
- D. 22



Answer: C

 Watch Video Solution

9. Crixivan, a drug produced by Merck and Co., is widely used in the fight against *AIDS* (acquired immune deficiency syndrome). The structure of crixivan is given below:



How many  $2^\circ$  alcohol groups are present in the above compound?

A. Zero

B. 1

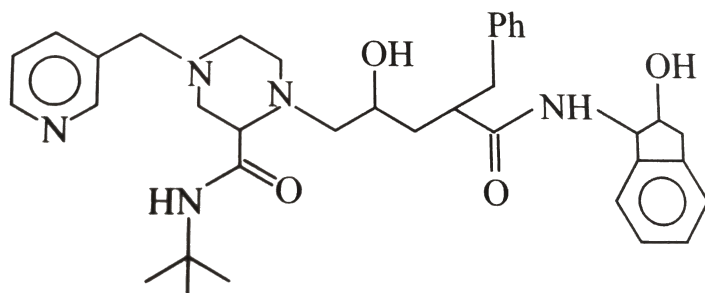
C. 2

D. 3

Answer: C

 Watch Video Solution

10. Crixivan, a drug produced by Merck and Co., is widely used in the fight against *AIDS* (acquired immune deficiency syndrome). The structure of crixivan is given below:



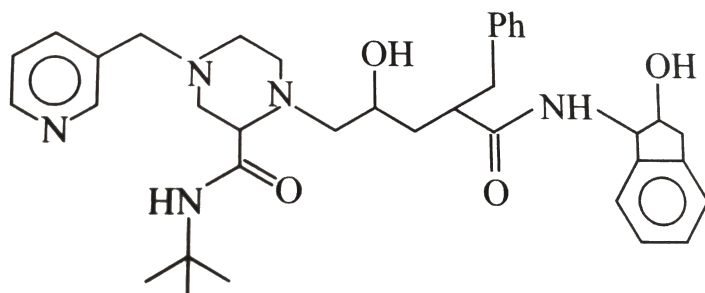
How many amide groups are present in the compound?

- A. Zero
- B. 1
- C. 2
- D. 3

Answer: C

 Watch Video Solution

11. Crixivan, a drug produced by Merck and Co., is widely used in the fight against *AIDS* (acquired immune deficiency syndrome). The structure of crixivan is given below:



How many  $3^\circ$  amine groups are present in the compound?

A. Zero

B. 1

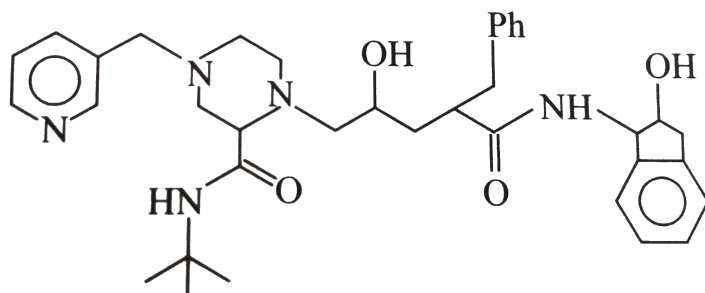
C. 2

D. 3

Answer: C

 Watch Video Solution

12. Crixivan, a drug produced by Merck and Co., is widely used in the fight against *AIDS* (acquired immune deficiency syndrome). The structure of crixivan is given below:



How many  $2^\circ$  amine groups are present in the compound ?

A. Zero

B. 1

C. 2

D. 3

Answer: A

 Watch Video Solution

## Multiple Corrcct Answers Types

1. Which of the following statements *is / are* wrong?

A.  $C_nH_{2n}$  is the general formula of alkanes.

B. In homologous series, all member have the same physical properties.

C. *IUPAC* means International Union of Physics and Chemistry.

D. Butane contains two  $1^\circ C$  atoms and two  $2^\circ C$  atoms.

Answer: A::B::C

 Watch Video Solution

2. Which of the following statements *is / are* correct?

- A. Homologous series can be represented by a general formula.
- B. The chemical properties of an organic compound depend on the functional group.
- C. Groups obtained by the removal of one *H* atom from the alkane are called alkyl group.
- D. Alkynes consist of one double-bond in their molecules.

**Answer: A::B::C**



**Watch Video Solution**

3. Which of the following statements *is / are* wrong?

- A. Acetic acid is the systematic name of vinegar.

B.  $Me - \overset{O}{\parallel}C - OH$  is an unsaturated compound.

C. Prefixes like n-,iso, sec-,tert,neo-,etc., are used in *IUPAC* system.

D. The systematic names of acids are formed by dropping-e of the name of parent alkane and adding -oic acid.

**Answer: A::B::C**

 [Watch Video Solution](#)

4. Which of the following statements *is/are* correct?

A.  $R - \overset{O}{\parallel}C - O - \overset{O}{\parallel}C - R$  is an unsaturated compound.

B. Neohydrocarbons contain a  $3^\circ C$  atom.

C. The *IUPAC* name of isopropyl alcohol is propan-2-ol.

D. The *IUPAC* name of ( $CH_3CN$ ) is ethanenitrile.

**Answer: C::D**

 [Watch Video Solution](#)

5. Which of the following statements *is / are* correct?

A. Methane was named as fire damp as it forms explosive mixture with air.

B. Primary suffixes are added to root word to show saturation or unsaturation in a *C* atom.

C. The *IUPAC* name of valeric acid is pentanoic acid.

D. The common name of hexanoic acid is caproic acid.

**Answer: A::B::C::D**

 [Watch Video Solution](#)



6. Which of the following statements *is / are* correct?

- A. The *IUPAC* name of amyl alcohol is pentanol.
- B. The *IUPAC* name of isoamyl alcohol is 3-methyl butanol.
- C. Wood spirit is methanol.
- D. Methyl alcohol is also called carbinol

**Answer: A::B::C::D**



**Watch Video Solution**

7. Which of the following statements *is / are* correct?

- A. The trivial name of organic compounds are called common names.

- B. The systematic name of organic compounds are obtained from the *IUPAC* system.
- C. The systematic names of alkanes are based on the number of *C* atoms in the longest continuous chain of *C* atoms.
- D. The maximum number of functional groups must be included in the *C* atom chain selected even if it does not satisfy the longest chain rule.

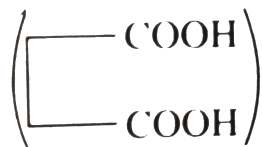
**Answer: A::B::C::D**

 [Watch Video Solution](#)

8. Which of the following statements *is/are* correct?

- A. The common name of ( $\text{HOOC} - \text{CH}_2 - \text{COOH}$ ) is malonic acid.

B. The common name of



is succinic acid.

C. The *IUPAC* name of  $(\text{CH}_2 = \text{CH} - \text{OCOCH}_3)$  is vinyl acetate.

D. The *IUPAC* name of acrylonitrile is Prop-2-ene-nitrile.

**Answer: A::B::D**



**Watch Video Solution**

9. Which of the following statements *is / are* correct?

A. The common name of benzene-1,2-diol is catechol.

B. The common name of benzene-1,3-diol is resorinol.

C. The common name of benzene-1,4-diol is quinol.

D. The common name of benzene -1,4-diol is hydroquinone

Answer: A::B::C::D

 [Watch Video Solution](#)

10. Which of the following statements *is / are* correct?

A. The common name of benzene-1,2,3-triol is pyrogallol.

B. The common name of benzene-1,2,4-triol is hydroxquinol.

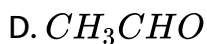
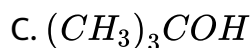
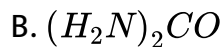
C. The common name of benzene-1,3,5-triol is phoroglucinol.

D. The common name of ( $CH_2 = CH - Ph$ ) is styrene.

Answer: A::B::C::D

 [Watch Video Solution](#)

11. The compounds in which  $C$  uses its  $sp^3$ - hybrid orbitals for bond formation are:



Answer: C::D

 [Watch Video Solution](#)

Single Correct Answer Type

1. The decreasing order of priority for the following functional group is:

I.  $-COOH$  II.  $-SO_3H$

III.  $-COOR$  IV.  $-COC_1$

A.  $(IV) > (III) > (II) > (I)$

B.  $(I) > (II) > (III) > (IV)$

C.  $(II) > (I) > (III) > (IV)$

D.  $(IV) > (III) > (I) > (II)$

**Answer: B**




[Watch Video Solution](#)

2. The decreasing order of priority for the following functional group

is

I.  $C \equiv N$  II.  $-CONH_2$

III.  IVgt  $-CHO$

A.  $(II) > (I) > (IV) > (III)$

B. (III) > (IV) > (I) > (II)

C. (I) > (II) > (IV) > (III)

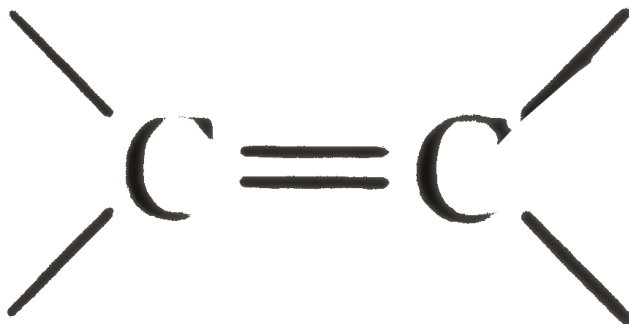
D. (I) > (II) > (III) > (IV)

**Answer: A**

 [Watch Video Solution](#)

3. The decreasing order of priority for the following functional groups is:

I.  $-OH$  II.  $C \equiv C$



III.

IV.  $-NH_2$

A.  $(IV) > (I) > (II) > (III)$

B.  $(IV) > (I) > (III) > (II)$

C.  $(I) > (II) > (IV) > (III)$

D.  $(I) > (IV) > (III) > (II)$

**Answer: C**



**Watch Video Solution**

4. The number of  $1^\circ$ ,  $2^\circ$ , and  $3^\circ$   $H$  atoms in 2,5,6-trimethyl octane, respectively, is

A. 16,5,3

B. 15,5,3

C. 16,6,3

D. 15,5,2



**Answer: B**

 [Watch Video Solution](#)

5. The number of  $1^\circ$ ,  $2^\circ$ , and  $3^\circ H$  atoms in 3-ethyl-5-methyl heptane, respectively, is:

A. 12,8,1

B. 14,4,2

C. 12,6,2

D. 12,8,2

**Answer: D**

 [Watch Video Solution](#)

6. The number of  $\sigma$ - and  $\pi$ -bond in hexan-2,4-diol, respectively, is:

A. 18,2

B. 17,2

C. 17,1

D. 18,1

**Answer: B**



[Watch Video Solution](#)

7. The number of  $\sigma$ - and  $\pi$ -bond in 5-oxohexanoic acid, respectively, is :

A. 18,2

B. 18,1

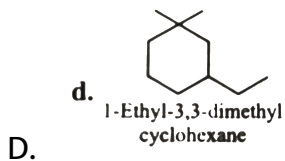
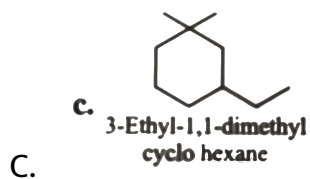
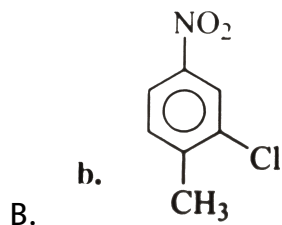
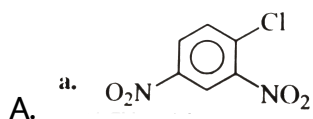
C. 17,2

D. 17,1

Answer: A

 Watch Video Solution

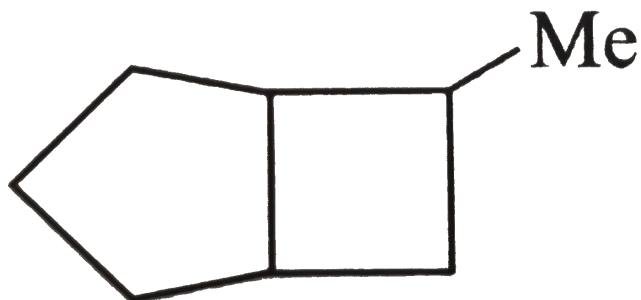
8. Which of the following is correctly named?



Answer: C

 Watch Video Solution

9. The systematic naming of the following cycloalkane is

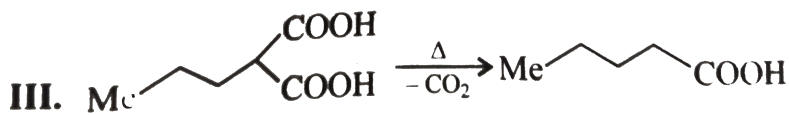


- A. 6-Methyl bicyclo [3.2.0] heptane
- B. 7-Methyl bicyclo [3.2.0] heptane
- C. 2-Methyl bicyclo [3.2.0] heptane
- D. 3-Methyl bicyclo [3.2.0] heptane

**Answer: A**

 Watch Video Solution

10. In which of the following reactions, the principal group loses its preferences?



a. I

b. I, II

c. I, II, III

d. I, II

A. I

B. I, II

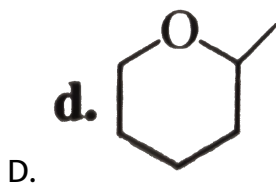
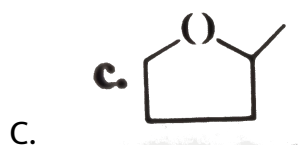
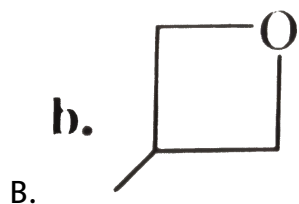
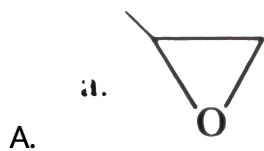
C. I, II, III

D. I, II

Answer: B

 Watch Video Solution

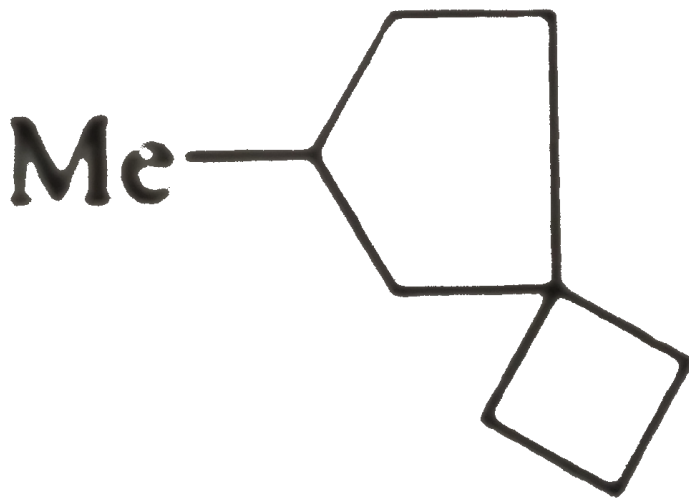
11. Which of the following is oxetane?



Answer: B

 Watch Video Solution

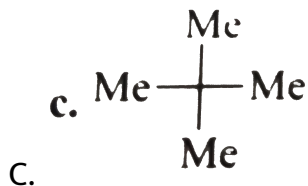
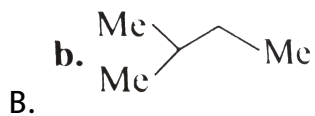
12. The systematic nomenclature of the following spiro-compound is:



- A. 2-Methyl spiro [3.4] octane
- B. 3-Methyl spiro [3.4] octane
- C. 6-Methyl spiro [3.4] octane
- D. 7-Methyl spiro [3.4] octane

**Answer: C**

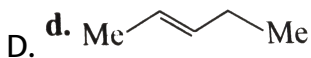
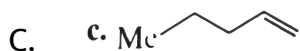
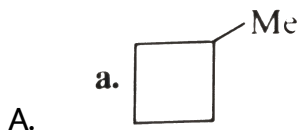
13. An alkane (*A*) having a molecular mass of 72 produces one monochlorination product. Compound (*A*) is:



Answer: C



14. A compound (*A*) with molecular formula  $C_5H_{10}$  gives one monochlorination product. Compound (*A*) is:



Answer: B

 [Watch Video Solution](#)

15. Which of the following the following in a  $3^\circ$  amine?

A. Propan-2-amine

B. *N*-Methyl ethanamine

C. Allyl amine

D. *N,N*-Diethyl butan-1-amine

**Answer: D**

 [Watch Video Solution](#)

**16.** Which of the following is a 3° alcohol?

A. *t*-Butyl carbinol

B. 2-Methyl propan-2-ol

C. 2-Methyl butan-1-ol

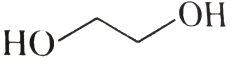
D. isobutyl alcohol

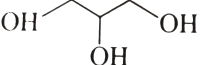
**Answer: B**

 [Watch Video Solution](#)

17. Which of the following is zerone?

A. *MeOH*

B. **b.**  HO-CH<sub>2</sub>-CH<sub>2</sub>-OH

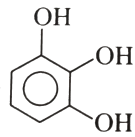
C. **c.**  HO-CH<sub>2</sub>-CH(OH)-CH<sub>2</sub>-OH

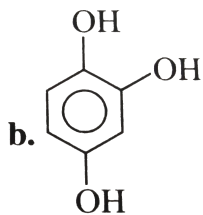
D. *EtOH*

Answer: A

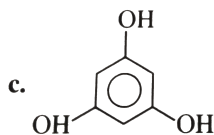
 [Watch Video Solution](#)

18. Which of the following is pyrogallol?

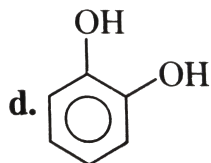
A. **a.** 



B.



C.



D.

**Answer: A**

 [Watch Video Solution](#)

**19.** In 3-chloro cyclohexanol, the primary prefix is:

A. 3-Chloro

B. Cycle

C. an (*e*)

D. *-ol*

**Answer: B**

 [Watch Video Solution](#)

**20.** In 2-Chloro-3-methyl hexanoic acid, the primary suffix is:

A. 2-Chloro-

B. *-3 - Methyl*

C. an (*e*)

D. oic acid

**Answer: C**

 [Watch Video Solution](#)

21. The correct name of the compound (*I*) is:



- A. (*E* - 2), (*E* - 4), Hepta-2,4-diene
- B. (*Z* - 2), (*Z* - 4), Hepta-2,4-diene
- C. (*E* - 2), (*Z* - 4), Hepta-2,4-diene
- D. (*Z* - 2), (*E* - 4), Hepta-2,4-diene

**Answer: D**

 [Watch Video Solution](#)

22. Which of the following is not a cumulated diene?

- A. Hexa-1,2-diene
- B. Hexa-2,3-diene

C. Penta-2,3-diene

D. Penta-1,3-diene

**Answer: D**

 [Watch Video Solution](#)

23. Which of the following has only  $1^\circ$  and  $2^\circ$  C atoms?

A. 2-Methyl butane

B. Butane

C. 2,2-Dimethyl butane

D. 2,2,3,3-Tetramethyl pentane

**Answer: C**

 [Watch Video Solution](#)

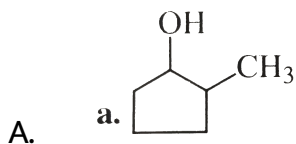
24. The *IUPAC* name of vinyl acetylene is:

- A. Pent-1-en-4-yne
- B. Pent-4-yn-1-ene
- C. But-1-en-3-yne
- D. But-1-yn-3-ene

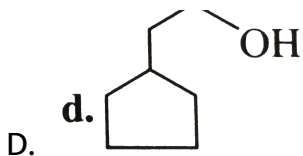
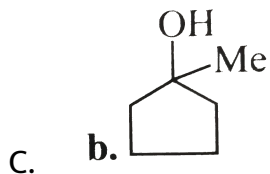
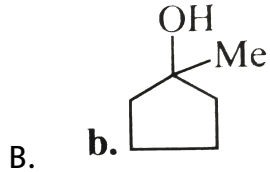
**Answer: C**

 [Watch Video Solution](#)

25. Which of the following structures represents cyclopentyl methyl carbino1?







Answer: C

 [Watch Video Solution](#)

26. The *IUPAC* name of acrolein is:

A. But-2-enal

B. Prop-2-enal

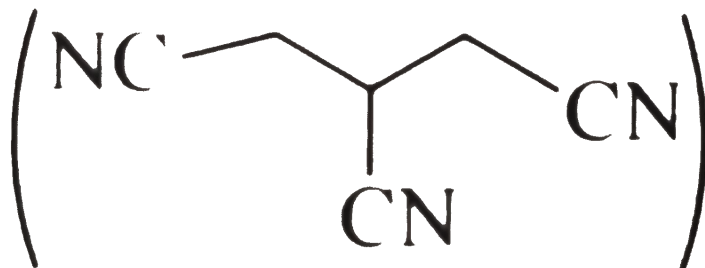
C. But-3-enal

D. 2-Methyl prop-2-enal

Answer: B

 Watch Video Solution

27. The *IUPAC* name of the following compound is



A. Propane-1,2,3-tricarbonitrile

B. 3-Cyanopentane-1,5-dinitrile

C. Pentane-1,3,5-trinitrile

D. All

**Answer: A**

 [Watch Video Solution](#)

**28.** Which of the following is not the name of  $CH_3NC$ ?

- A. (a) Methyl isocyanide
- B. (b) Aceto isonitrile
- C. (c) Methyl carbyl amine
- D. (d) Acetronitrile

**Answer: D**

 [Watch Video Solution](#)

**29.** The *IUPAC* name of  $Ph - CN$  is :

A. (a) Phenyl cyanide

B. (b) Benzonitrile

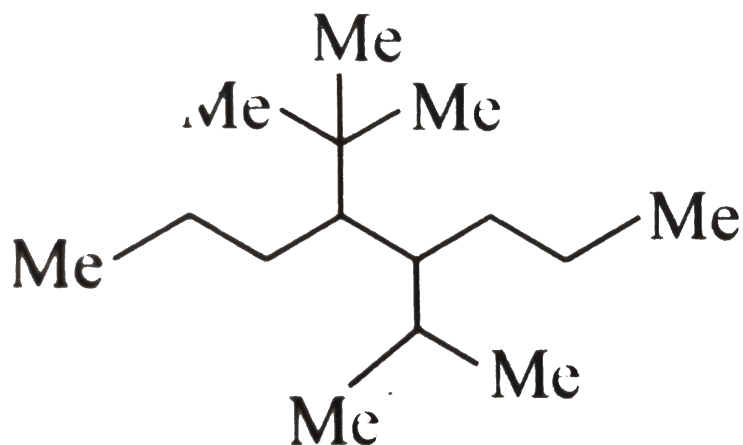
C. (c) Benzene nitrile

D. (d) All

**Answer: C**

 [Watch Video Solution](#)

30. Give the *IUPAC* name of :



A. 2,2-Dimethyl-3-propyl-4-isopropyl heptane

B. 4-Isopropyl-5-tert-butyl octane

C. 4-tert-Butyl-5-isopropyl octane

D. 2-Methyl-3-propyl-4-isopropyl heptane

**Answer: C**



**Watch Video Solution**

**31.** Which of the following statements is wrong for homologous series?

A. (a) All members have a general formula.

B. (b) All members have the same functional group.

C. (c) All members have the same chemical properties.

D. (d) All members have the same physical properties.

**Answer: D**

 [Watch Video Solution](#)

**32.** The alkane which has only  $1^\circ H$  atoms is:

A. Neopentane

B. Isopentane

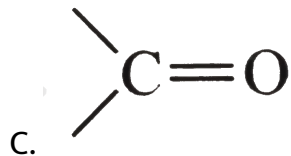
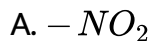
C. Pentane

D. 2,2-Dimethyl butane

**Answer: A**

 [Watch Video Solution](#)

**33.** Which group is always taken as a substituent in the *IUPAC* system of nomenclature ?



**Answer: A**

 [Watch Video Solution](#)

34. IUPAC name of  $(CH_3)_3C - CH = CH_2$  is

A. 2,2-Dimethyl but-3-ene

B. 2,2-Dimethyl pent-4-ene

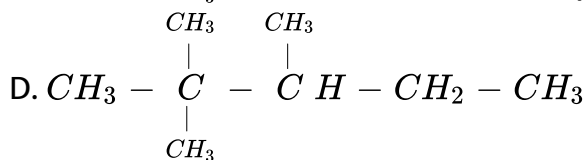
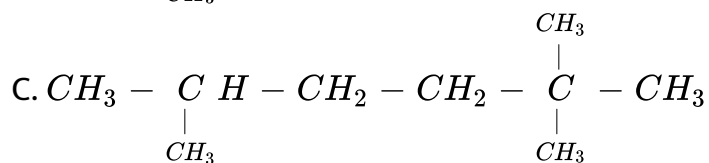
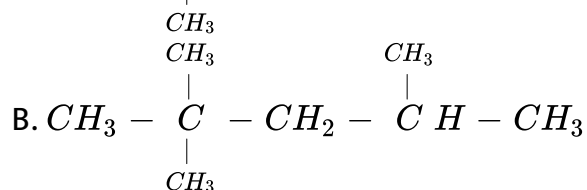
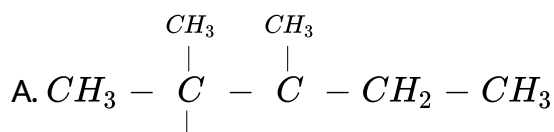
C. 3,3-Dimethyl but-1-ene

D. Hex-1-ene

Answer: C

 Watch Video Solution

35. Which of the following compounds is 2,2,3-trimethylhexane?



Answer: D

 Watch Video Solution



36. The bond between carbon atom (1) and carbon atoms (2) in compound  $N \equiv \underset{(1)}{C} - \underset{(2)}{C} H = CH_2$  involves the overlapping between

A.  $sp^2$  and  $sp^2$

B.  $sp^3$  and  $sp$

C.  $sp$  and  $sp^2$

D.  $sp$  and  $sp$

Answer: C



Watch Video Solution

37. If two compounds have the same empirical formula but different molecular formula, they must have

A. Different percentage composition

B. Different molecular weights

C. Same velocity

D. Same vapour density

**Answer: B**

 [Watch Video Solution](#)

**38.** The number of  $\sigma$ - and  $\pi$ -bond in 1-butene-3-yne is:

A.  $5\sigma$  and  $5\pi$

B.  $7\sigma$  and  $3\pi$

C.  $8\sigma$  and  $2\pi$

D.  $6\sigma$  and  $4\pi$

**Answer: B**

 [Watch Video Solution](#)

39. Which of the following compounds has isopropyl group?

A. 2,2,3,3-Trimethyl pentane

B. 2,2-Dimethyl pentane

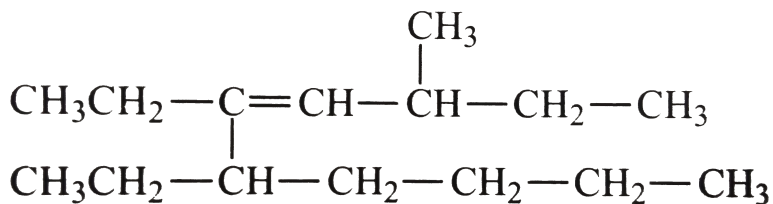
C. 2,2,3-Trimethyl pentane

D. 2-Methyl pentane

Answer: D

 Watch Video Solution

40. The correct *IUPAC* name of the compound is:



- A. 5,6-Dimethyl-3-methyl dec-4-ene
- B. 5,6-Dimethyl-8-methyl dec-6-ene
- C. 6-Butyl-5-ethyl-3-methyl oct-4-ene
- D. 2,4,5-Triethyl-3-nonene

**Answer: A**

 [Watch Video Solution](#)

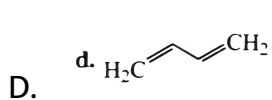
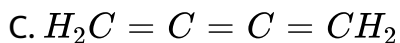
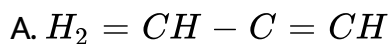
41. The hybridisation of  $C$  atoms in  $(C - C)$  single-bond of  $H - C \equiv C - CH = CH_2$  is :

- A.  $H_2C = CH - C \equiv CH$
- B.  $HC \equiv C - CH_2 - C \equiv CH$
- C.  $H_2C = C = C = CH_2$
- D.  $sp - sp^2$

Answer: C

 Watch Video Solution

42. Which of the following represents the given sequence of hybridisation of carbon atoms from left to right  $sp^2$ ,  $sp^2$ ,  $sp$ ,  $sp$ ?



Answer: A

 Watch Video Solution

43. The *IUPAC* name of  $C_6H_5COCl$  is :

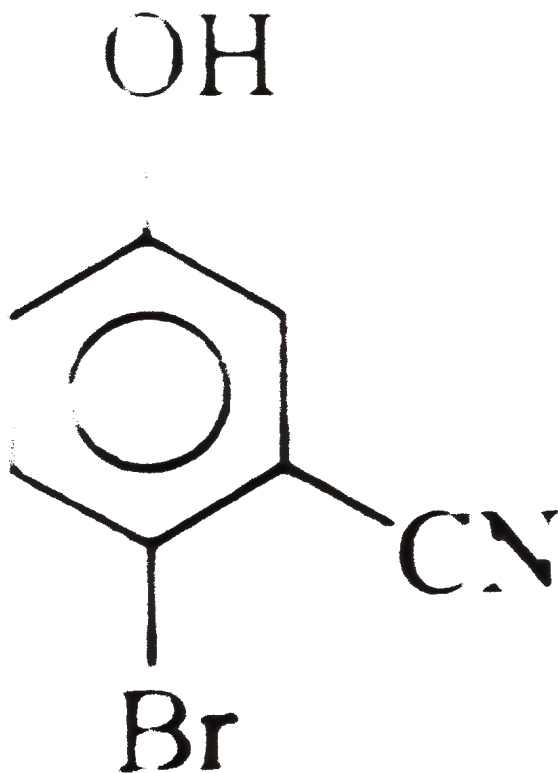
- A. Benzoyl chloride
- B. Benzene chloro ketone
- C. Benzene carbonyl chloride
- D. Chlorophenyl ketone

**Answer: A**



**Watch Video Solution**

44. The *IUPAC* name of the following compound is



- A. 4-Bromo-3-cyanophenol
- B. 2-Bromo-5-hydroxy benzo nitrile
- C. 2-Cyano-4-hydroxy bromo benzene
- D. 6-Bromo-3-hydroxy benzonitrile

Answer: B

 Watch Video Solution

## Assertion Reasoning Type

1. Assertion ( $A$ ) : Pentane and 2-methyl pentane are homologues.

Reason ( $R$ ): Pentane is a straight-chain alkane, while 2-methyl pentane is a branched-chain alkane.

- A. If both ( $A$ ) and ( $R$ ) are correct and ( $R$ ) is the correct explanation for ( $A$ ).
- B. If both ( $A$ ) and ( $R$ ) are correct and ( $R$ ) is not the correct explanation.
- C. If ( $A$ ) is correct and ( $R$ ) is incorrect.
- D. If both ( $A$ ) and ( $R$ ) are incorrect.



**Answer: B**

 [Watch Video Solution](#)

2. Assertion ( $A$ ) : All the  $C$  atoms of but-2-ene lie in one plane

Reason ( $R$ ): Double-bond  $C$  atoms are  $sp^2$ -hybridised.

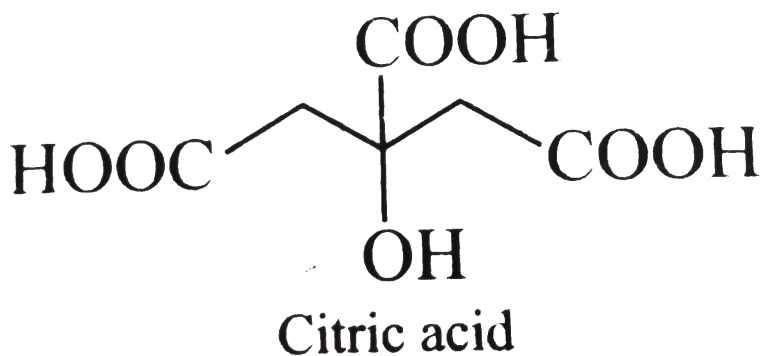
- A. If both ( $A$ ) and ( $R$ ) are correct and ( $R$ ) is the correct explanation for ( $A$ ).
- B. If both ( $A$ ) and ( $R$ ) are correct and ( $R$ ) is not the correct explanation.
- C. If ( $A$ ) is correct and ( $R$ ) is incorrect.
- D. If both ( $A$ ) and ( $R$ ) are incorrect.

**Answer: A**

 [Watch Video Solution](#)

3. Assertion (*A*) : The *IUPAC* name of the citric acid is 2-hydroxypropane-1,2,3-tricarboxylic acid

Reason (*R*): When an unbranched *C* atom directly linked to more than two like-functional groups, then it is named as a derivative of the parent alkane which does not include the *C* of the functional groups.



- A. If both (*A*) and (*R*) are correct and (*R*) is the correct explanation for (*A*).
- B. If both (*A*) and (*R*) are correct and (*R*) is not the correct explanation.

C. If (*A*) is correct and (*R*) is incorrect.

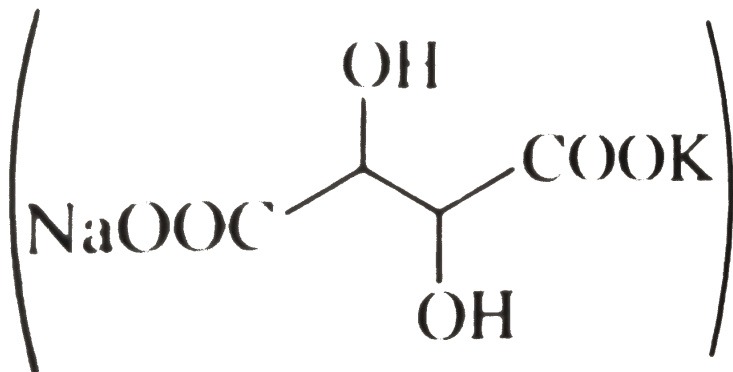
D. If both (*A*) and (*R*) are incorrect.

**Answer: A**

 [Watch Video Solution](#)

4. Assertion (*A*) : Rochelle's salt is used as a complexing agent in Tollens reagent.

Reason (*R*). Sodium potassium salt of tartaric acid is known as Rochelle's salt. The *IUPAC* name of Rochelle's salt is sodium potassium-2,3-dihydroxy butane-1,4- diate.



- A. If both ( $A$ ) and ( $R$ ) are correct and ( $R$ ) is the correct explanation for ( $A$ ).
- B. If both ( $A$ ) and ( $R$ ) are correct and ( $R$ ) is not the correct explanation.
- C. If ( $A$ ) is correct and ( $R$ ) is incorrect.
- D. If both ( $A$ ) and ( $R$ ) are incorrect.

**Answer: D**



**Watch Video Solution**

5. Assertion ( $A$ ): The *IUPAC* name of isoprene is 2-methyl buta-1,3-diene.

Reason ( $R$ ): Isoprene unit is a monomer of natural rubber

- A. If both ( $A$ ) and ( $R$ ) are correct and ( $R$ ) is the correct explanation for ( $A$ ).
- B. If both ( $A$ ) and ( $R$ ) are correct and ( $R$ ) is not the correct explanation.
- C. If ( $A$ ) is correct and ( $R$ ) is incorrect.
- D. If both ( $A$ ) and ( $R$ ) are incorrect.

**Answer: B**

 [Watch Video Solution](#)

### Fill In The Blanks Type

1. The compounds having both  $sp$  – and  $sp^2$ -hybrideised  $C$  atoms is ..... (propane, propdiene).

 [Watch Video Solution](#)

2. ....ring is the most strained. (Cyclopropane, Cyclobutane, Cyclopentane)

 [Watch Video Solution](#)

3. The terminal  $C$  atom in butane is .....hybridised.

 [Watch Video Solution](#)

4. A vic diol has two hydroxyl group on..... $C$  atoms

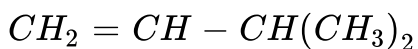
 [Watch Video Solution](#)

5. The *IUPAC* name of succinic acid is.....

 [Watch Video Solution](#)

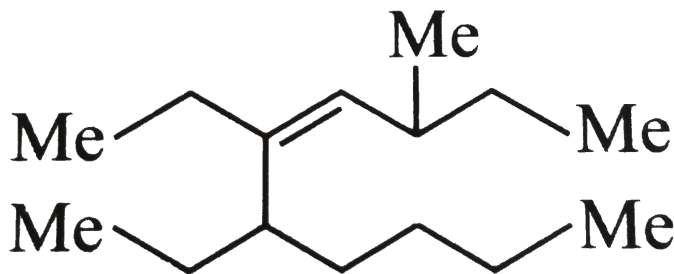
## Analytical And Descriptive Type

1. Give the *IUPAC* name of the following compound.



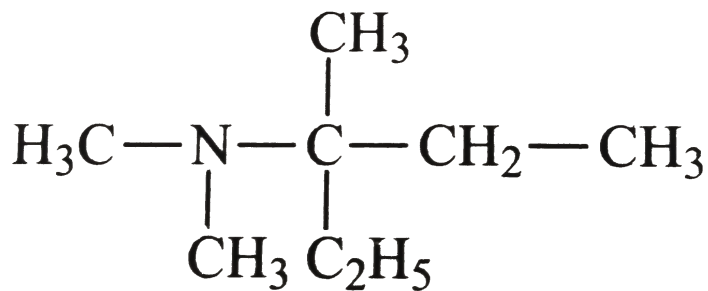
 [Watch Video Solution](#)

2. Give the *IUPAC* name of the following compound.



 [Watch Video Solution](#)

3. Give the *IUPAC* name of the following compound.



 [Watch Video Solution](#)