



CHEMISTRY

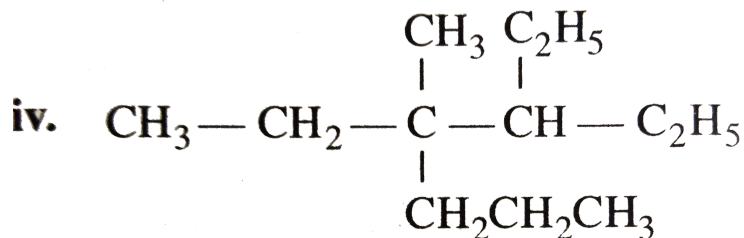
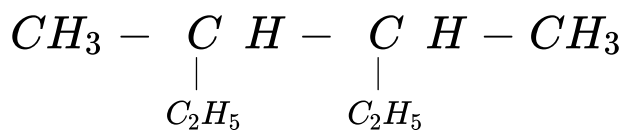
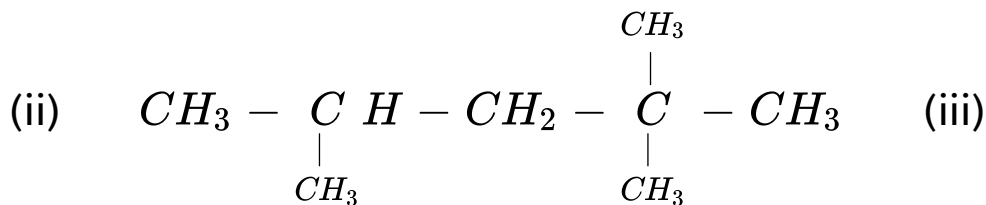
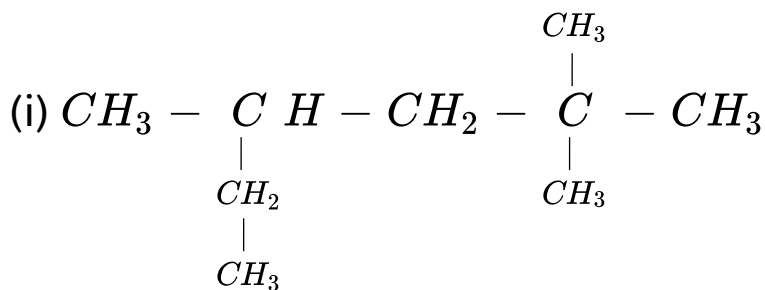
BOOKS - CENGAGE CHEMISTRY

(HINGLISH)

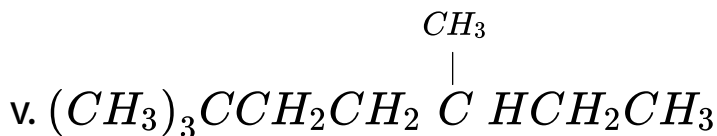
CLASSIFICATION AND NOMENCLATURE OF ORGANIC COMPOUNDS

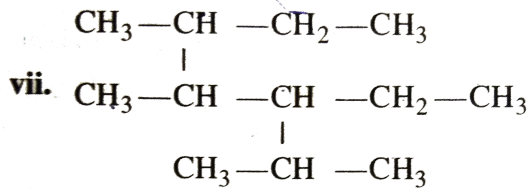
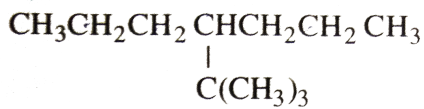
Illustration

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

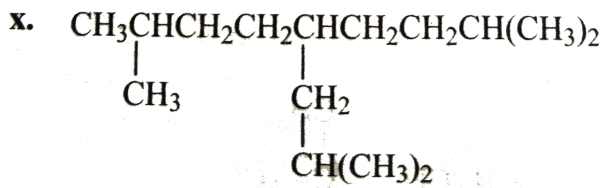
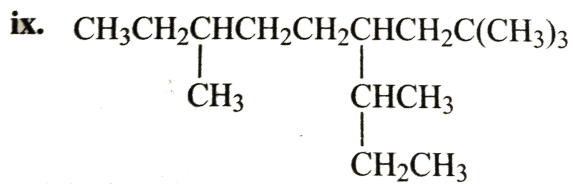
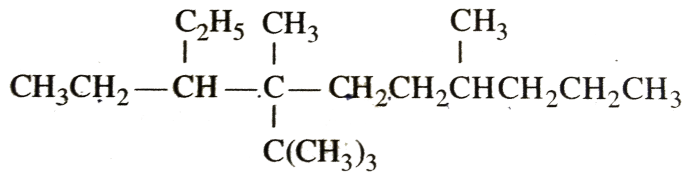


(iv)

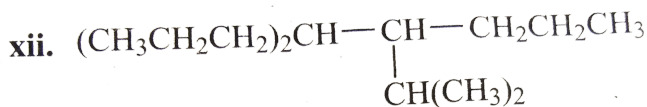
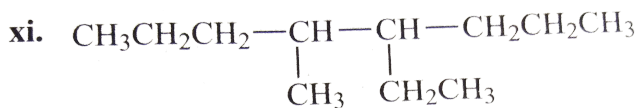




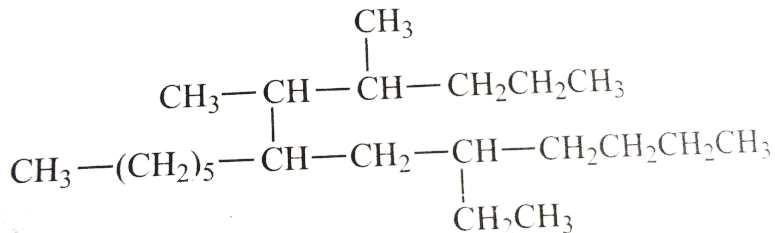
viii.



vi.



xiii.



(b) What is wrong with the following names? Draw the structures they represent and give their correct names.

i. 1, 1 – *Dimethypen tan ceii.* 2- Methyl-2-
proplhexan

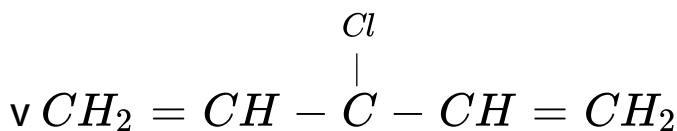
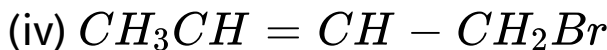
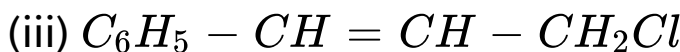
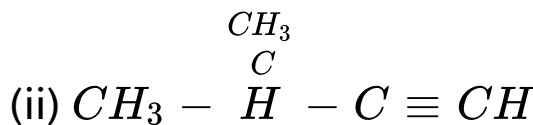
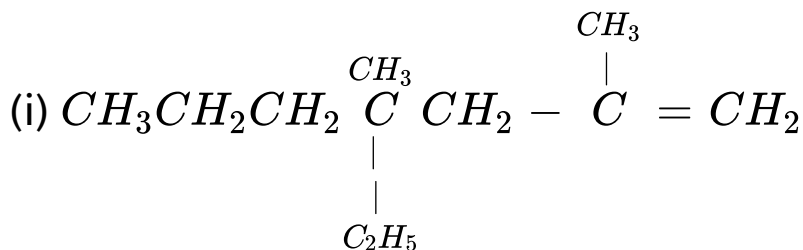
iii. 3-Dimethylpentane

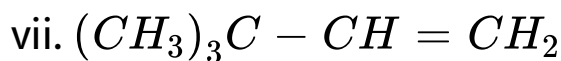
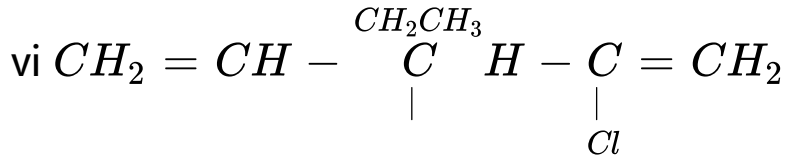
iv. 4,4-Dimethyl-3-ethylpentane

v. 4-(2-Methylethyl) heptane

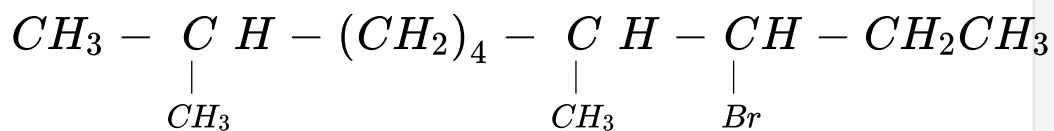


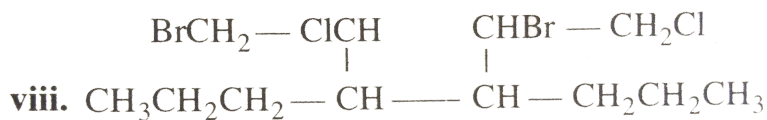
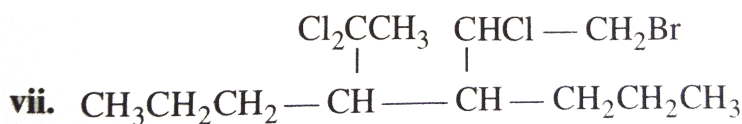
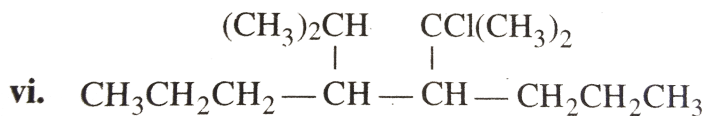
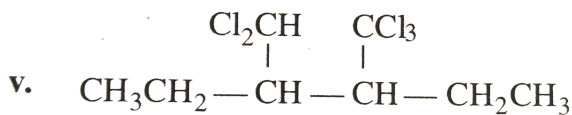
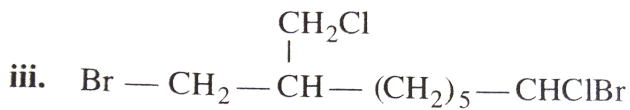
2. Given the *IUPAC* names of the following compounds:



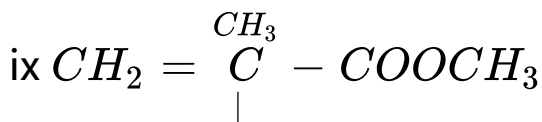
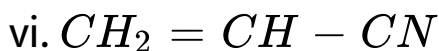
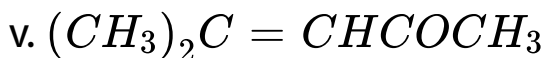
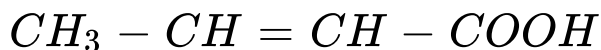
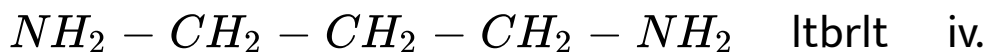
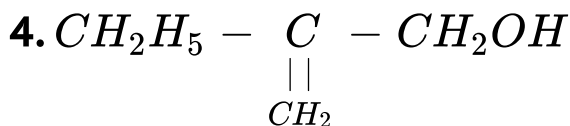


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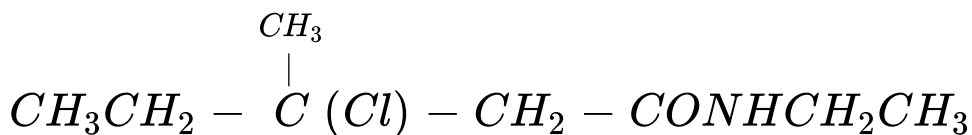


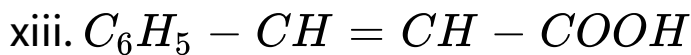
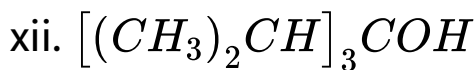
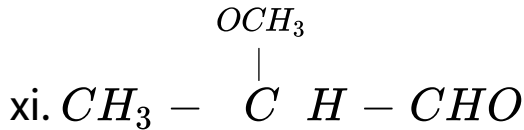


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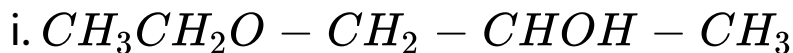
x.



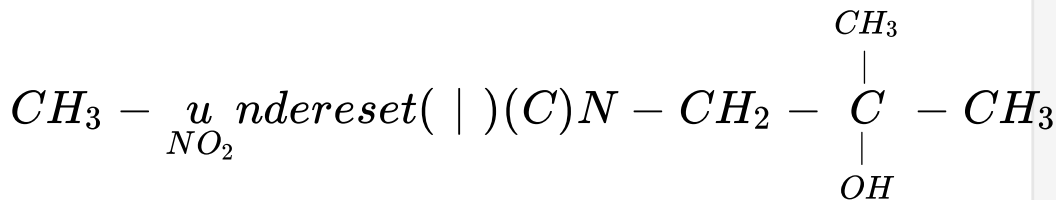


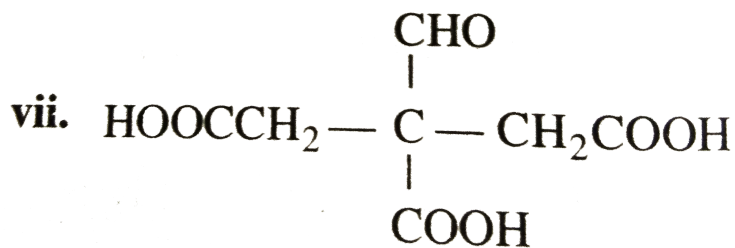
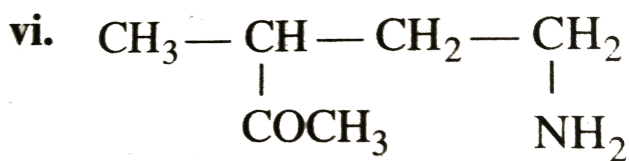
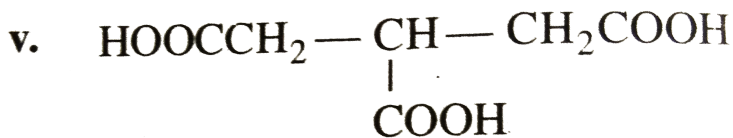
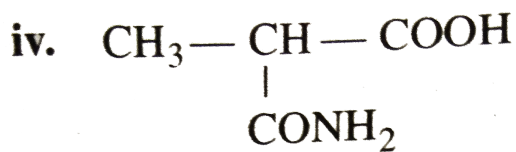
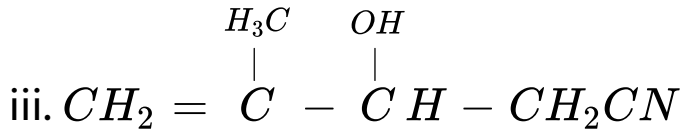
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5. Give the *IUPAC* names for the following polyfunctional compounds:



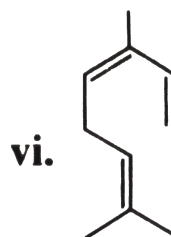
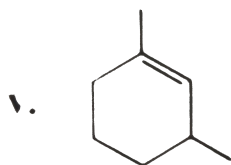
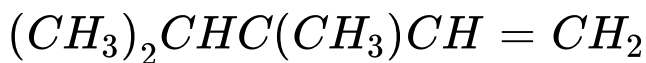
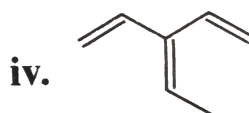
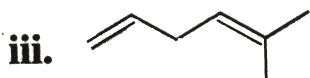
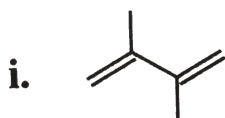
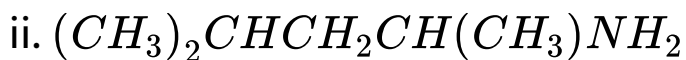
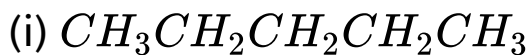
ii.





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

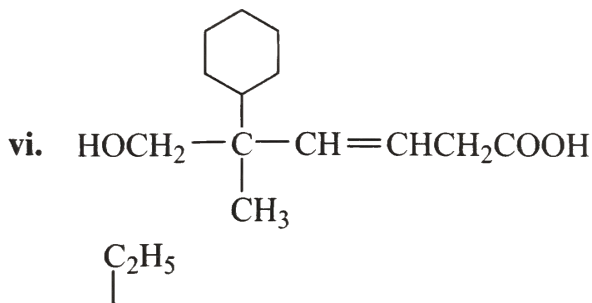
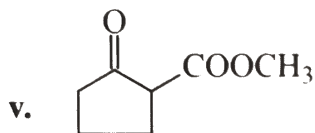
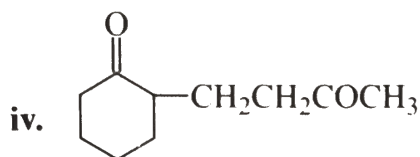
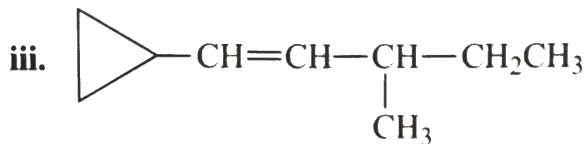
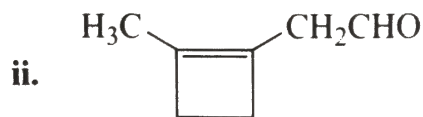
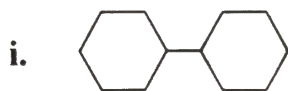


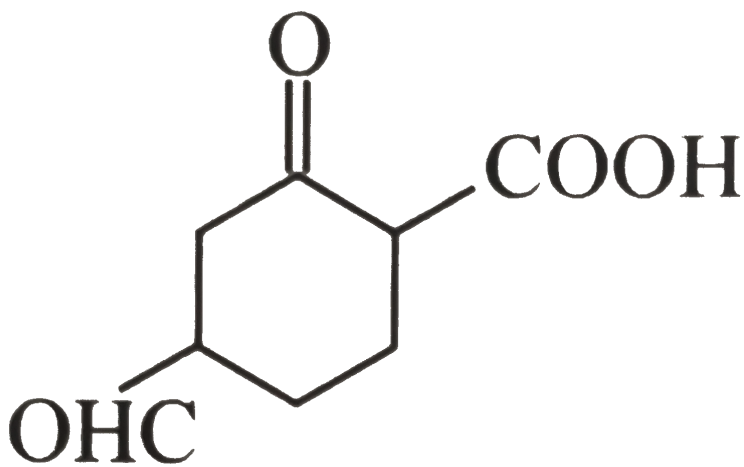
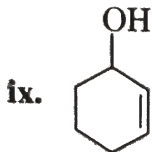
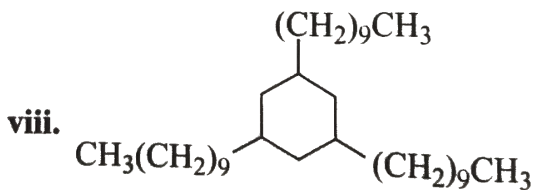
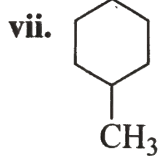
b.



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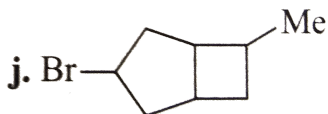
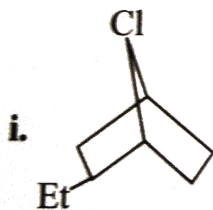
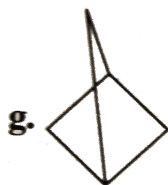
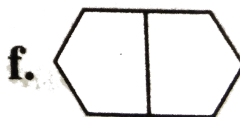
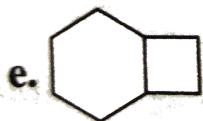
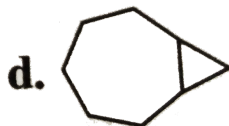
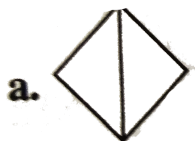
7. Given the *IUPAC* names of the following compounds:





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

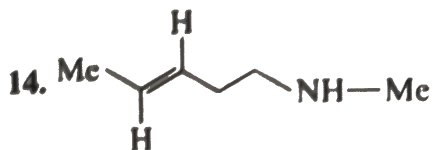
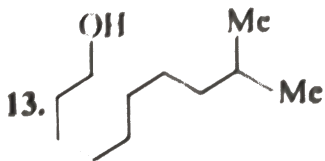
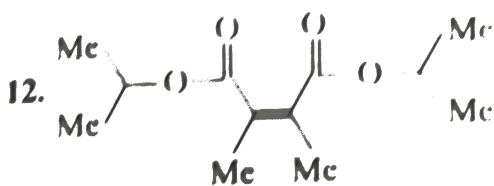


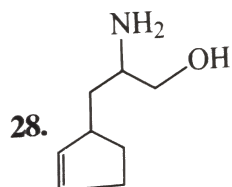
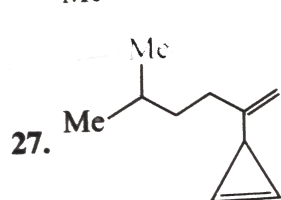
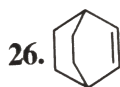
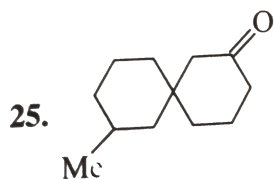
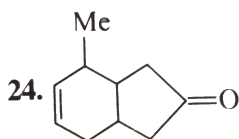
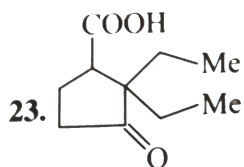
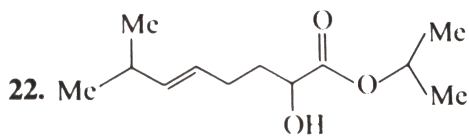
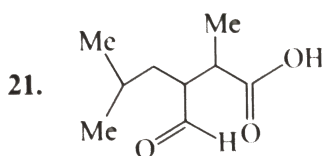
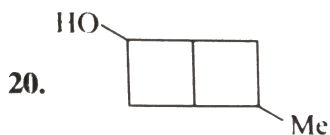
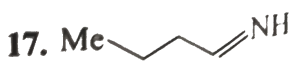
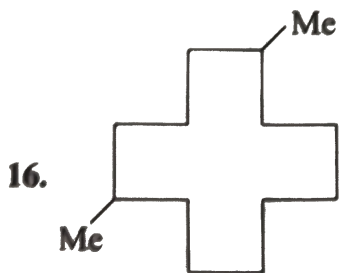
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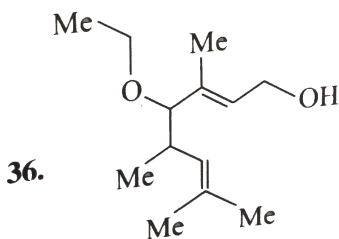
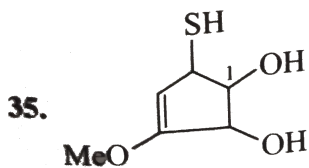
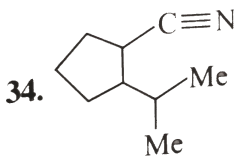
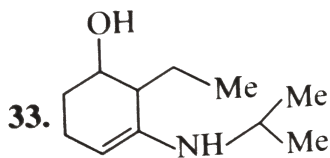
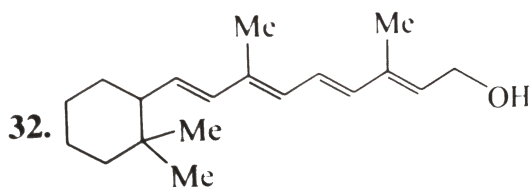
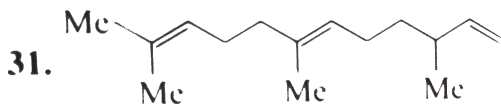
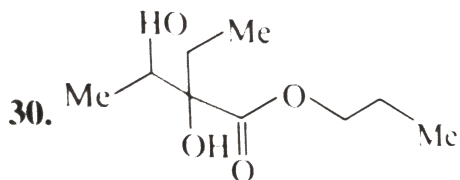
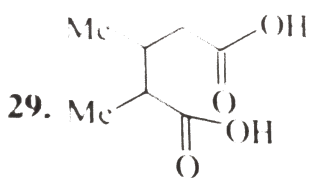
Solved Example

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.
- 11.

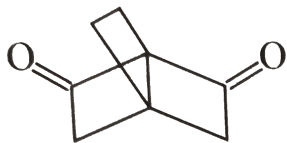
1.



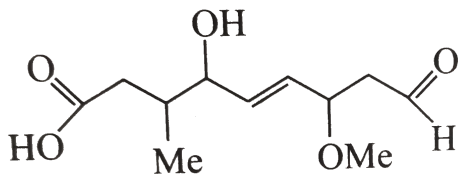




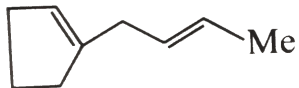
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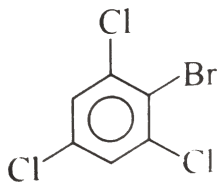
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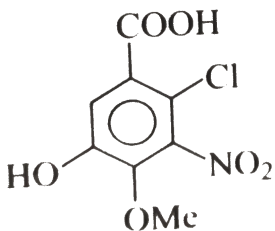
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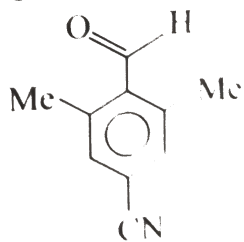
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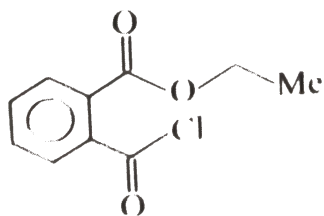
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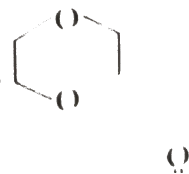
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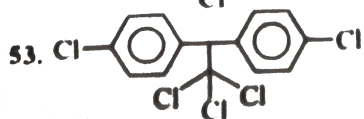
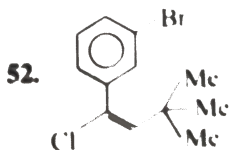
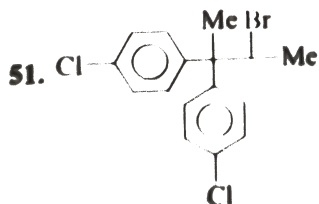
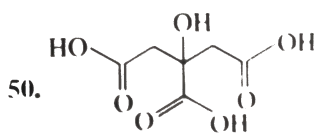
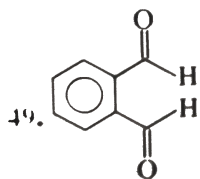
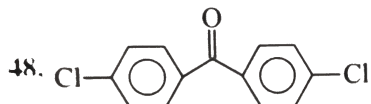
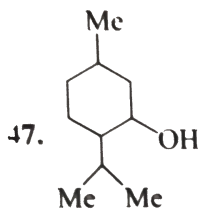
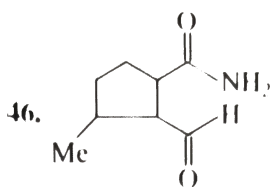
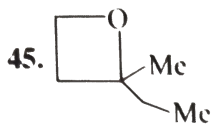


43.



44.





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2. 1,6-Diethyl cyclohexene
2. 4-Hydroxy-5-isopropyl hept-6-yn-2-one
3. 6-Ethyl-4-isopropyl-2-methyl decane
4. 2,2-Dimethyl cyclopent-3-en-1-one
5. Benzonitrile
6. Bicyclo [4.1.0] hept-3-en-2-one
7. Spiro [3.5] non-5-en-2-ol
8. 1-Ethyl-2-methyl cyclohexane
9. 4-Bromo-2-ethyl-1-methyl cyclohexane
10. 3-Isopropyl cyclopentane carbaldehyde
11. 4-cyclopropyl-3,6-diethyl undecane
12. 6-(Cyclobut-2-enyl) hex-2-ene
13. 1,4-Dicyclopentyl butane

14. Ethylidene bromide
15. Ethylene dichloride
16. trans.-1,3 -Dibromo cyclobutane
17. 2-exo-3-endo Dichloro bicyclo [2.2.1] heptane
18. Benzocyclopentene
19. 2,5-Dimethyl oxalane or 2,5-dimethyl oxacyclopentane
20. Methyl vinyl carbonyl
21. 3-Cyclopentenyl ethyl ether
22. sec-Butyl isopropyl ether
23. N,N-Diethyl butan-1-amine
24. o-Toluidine
25. Isoamyl alcohol
26. sec-Butyl alcohol

27. isobuty1 alcohol

28. Maleic acid

29. Caproic acid

Z-Crotonalddehyde



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3. Write the correct name of the following :

1. Pent-1-yn-5-ol

2. 2-Ethy1pent-2-ene

3. 4-Cyclopenty1 butane

4. Buty1 cyclo propane

5.1-Bromo cyclo hex-3-ene

6. 3,5,9-Trimethyl decane

7. 1,3,4-Trimethyl cyclohexane

8. 2-(2-Methyl butyl) cyclohexane-1-ol

1,1-Dimethyl pentane



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4. Write the structure of *cetyl* dimethyl ammonium bromide, a compound with antiseptic property and also used as a cationic detergent.

Predict its solubility behaviour in water and diethyl ether.

b. Write structure of *cetyltrimethyl* ammonium

bromide, a popular cationic detergent used in hair conditioners.

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

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Exercises

1. write the structural formula for each of the following

a. A 3° amine with the formula C_3H_9N .

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

c. A 3° alcohol with the formula C_4H_8O .

d. Three 2° alkyl halides with the formula $C_5H_{11}Cl$.

e. Three 1° alcohols with the formula C_4H_8O .

f. A 2° with the formula C_3H_6O .

g. Two esters with the formula $C_3H_6O_2$.

g. Two esters with the formula $C_3H_6O_2$.

h. Four 1° alkyl halides with the formula $C_5H_{11}Cl$

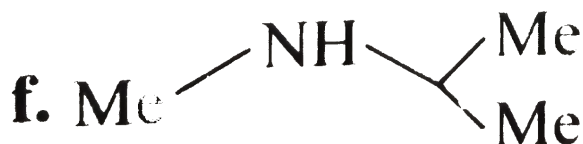
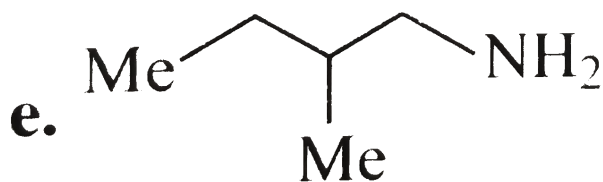
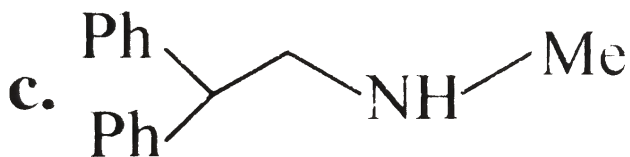
.

- i. A 3° alkyl halide with the formula $C_5H_{11}Cl$.
- j. Three aldehydes with the formula $C_5H_{10}O$.
- k. Three ketones with the formula $C_5H_{10}O$.
- l. A 2° amine with the formula C_3H_9N .
- m. Two amides with the formula C_2H_5NO .
- n. Two 1° amines with the formula C_3H_9N .



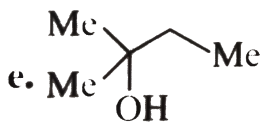
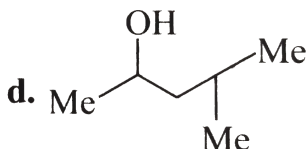
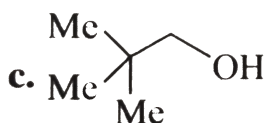
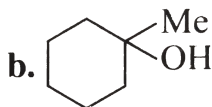
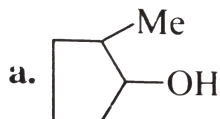
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2. Indicate the following as 1°, 2°, and 3°



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



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



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



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



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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.



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8. Write the *IUPAC* name of the compound (*A*) which is a 2-methyl branched alkane having a molecular mass of 245. This compound is a sex-attractant and is isolated from female tiger moths.



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

- A. 2-methyl butane
- B. 2-methyl cyclobutane
- C. 2-methyl pentane
- D. 2-methyl propane

Answer: A



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

- A. Propanal
- B. Ethane-1,2-diol
- C. Ethane-1,2-dial
- D. None of the above

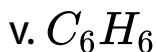
Answer: C



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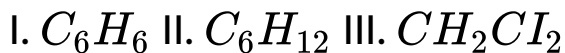
Concept Application Type

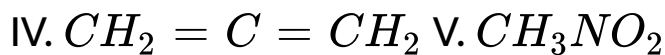
1. Given the hybridization state of each carbon in the following compounds :



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2. Indicate the σ - and π - bonds in the following molecules:





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3. Write the bond line formula for the following compounds:

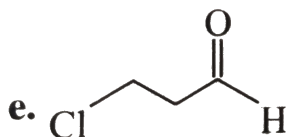
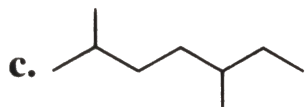
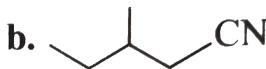
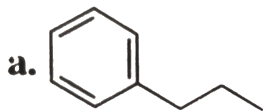
I. Isopropyl alcohol II. 2,3-Dimethyl butanal

III. Heptan-4-one



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



a.

b. 

c. 







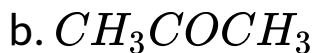
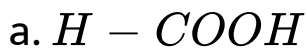
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5. Which of the following represents the correct *IUPAC* name for the compounds concerned?
- a. 2,2-Dimethyl pentane or 2-Dimethyl pentane
 - b. 2,4,7-Trimethyloctane or 2,5,7-Trimethyloctane
 - c. 2-Chloro-4-methylpentane or 4-Chloro-2-methylpentane
 - d. But-3-yn-1-ol or But-4-ol-1-yne



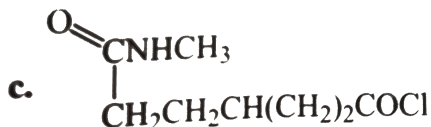
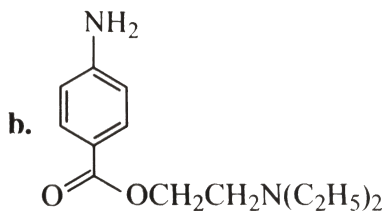
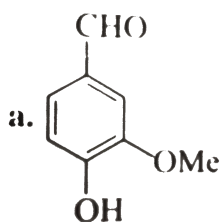
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6. Draw the formulae for the first five numbers of each homologous series beginning with the following compounds:



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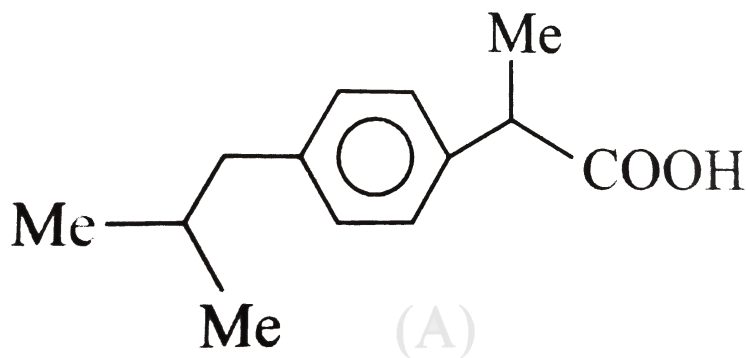
7. Identify the functional groups in the following compounds.



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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

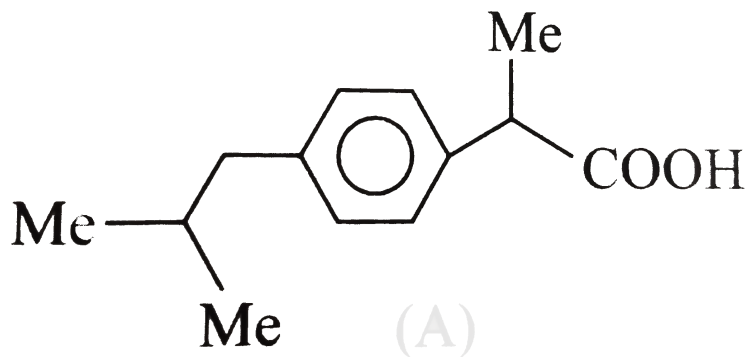
D. Both (a) and (b)

Answer: B



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



The *IUPAC* name of (A) is:

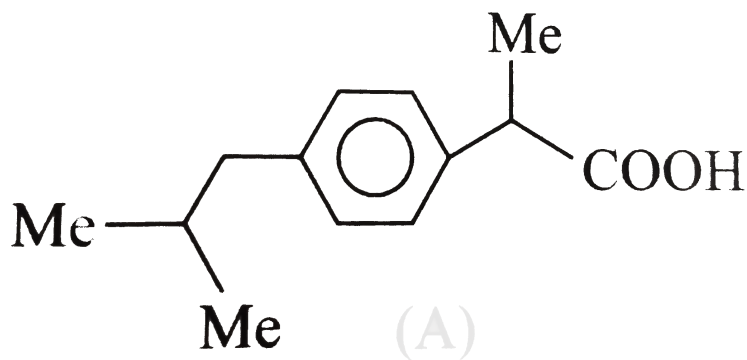
- A. 3-(p-Isobutyl phenyl) propanoic acid
- B. 2-(p-Isobutyl phenyl) propanoic acid
- C. 3-(p-sec-Butyl phenyl) propanoic acid
- D. 2-(p-sec-Butyl phenyl) propanoic acid

Answer: B



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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 π - bonds in (*A*) is :

A. 2

B. 3

C. 4

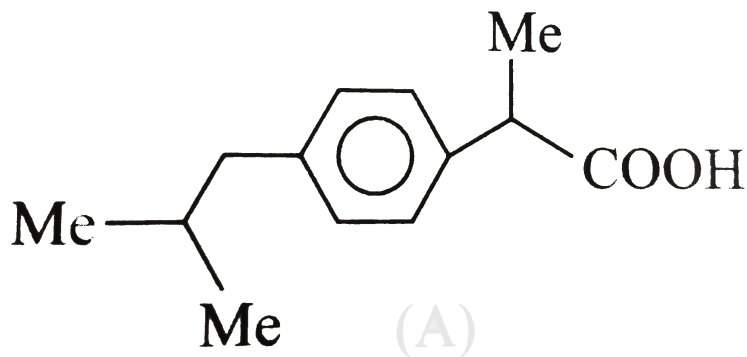
D. 5

Answer: C



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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 σ -bonds in (A) is:

A. 30

B. 31

C. 32

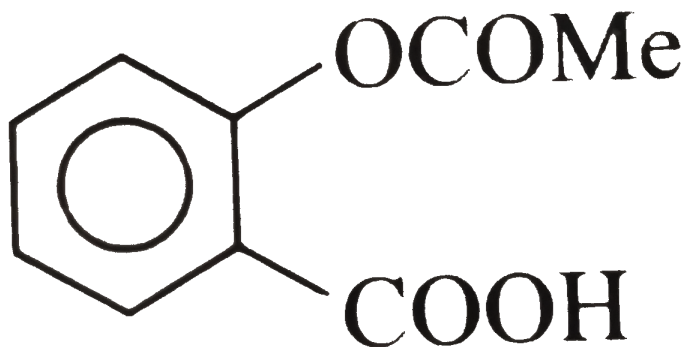
D. 33

Answer: D



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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. $-COOH$

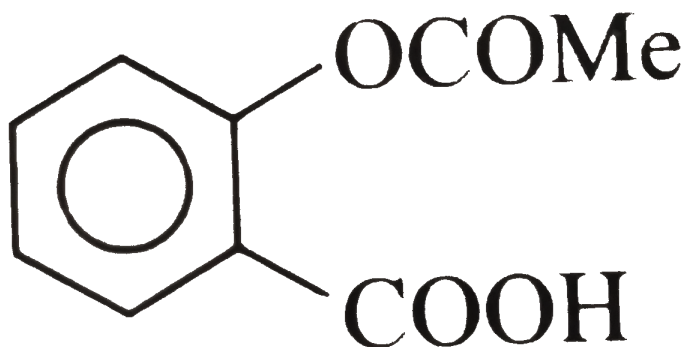
C. Ester

D. All

Answer: B

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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?

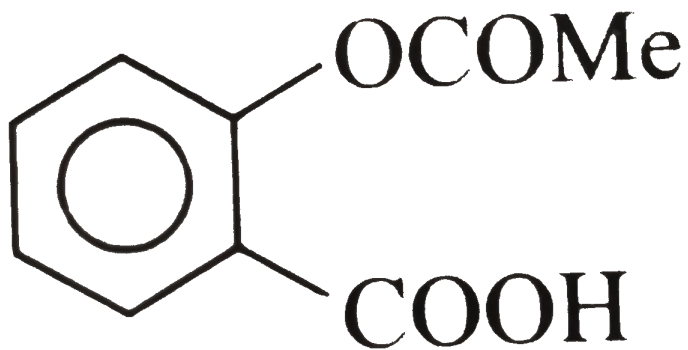
- A. 2-Acety salicylic acid
- B. 2-Acetoxy benzoc acid
- C. 2-Acetoxy salicylic acid
- D. None

Answer: C



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7. Aspirin is widely used as an analgesic drug. It is optically inactive. The structure of asprim is:



The number of π - bonds in (A) is:

A. 3

B. 4

C. 5

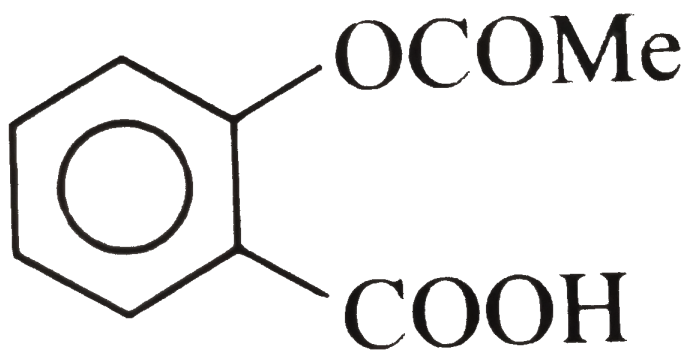
D. 6

Answer: C



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8. Aspirin is widely used as an analgesic drug. It is optically inactive. The structure of aspirin is:



The number of σ - bonds in (A) is:

A. 19

B. 20

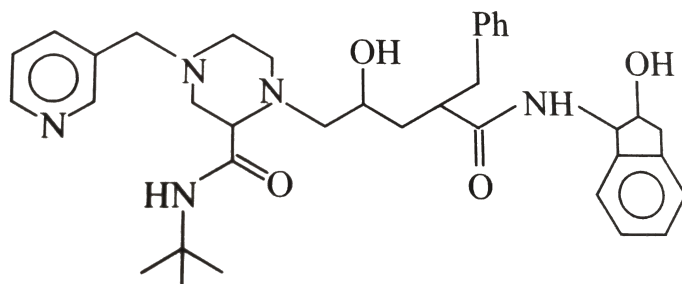
C. 21

D. 22

Answer: C

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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° alcohol groups are present in the above compound?

A. Zero

B. 1

C. 2

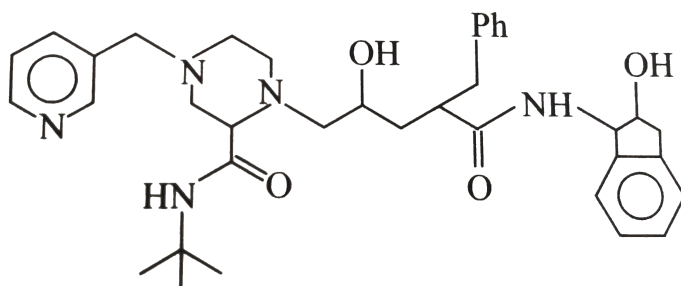
D. 3

Answer: C



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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

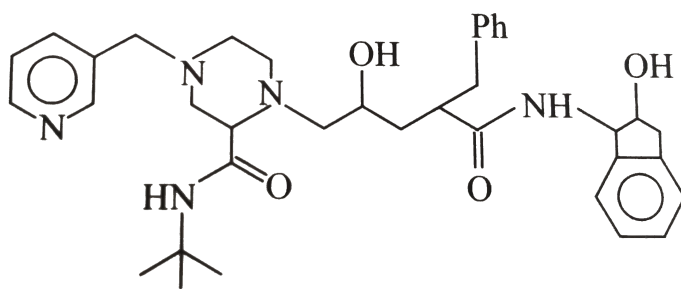
D. 3

Answer: C



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



How many 3° amine groups are present in the compound?

A. Zero

B. 1

C. 2

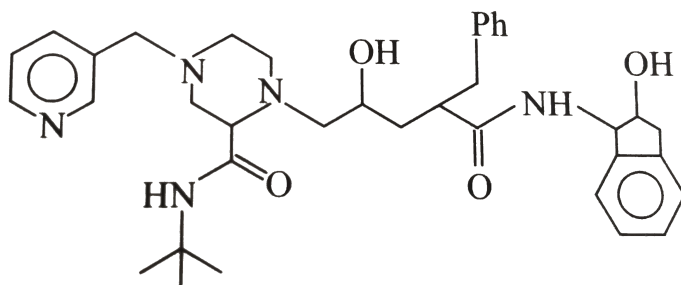
D. 3

Answer: C



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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° amine groups are present in the compound ?

A. Zero

B. 1

C. 2

D. 3

Answer: A



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Multiple Corrcct Answers Types

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

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

B. In homologous series, all members 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



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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



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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 *IPUAC* system.

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

Answer: A::B::C



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

A. $\left(R - \overset{\overset{O}{\parallel}}{C} - O - \overset{\overset{O}{\parallel}}{C} - R \right)$ 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



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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



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

(i)The IUPAC name of amyl alcohol is pentanol.

(ii)The IUPAC name of isoamyl alcohol is 3-methyl butanol.

(iii)Wood spirit is methanol.

(iv)Methyl alcohol is also called carbinol

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



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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 numebe 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



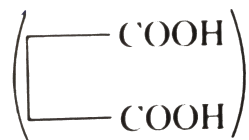
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8. Which of the following statements *is/are* correct?

A. The common name of

$(HOOC - CH_2 - COOH)$ is malonic acid.

B. The common name of



is succinic acid.

C. The *IUPAC* name of

$(CH_2 = CH - OCOCH_3)$ is vinyl acetate.

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

Answer: A::B::D



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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



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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.

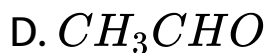
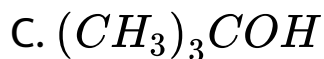
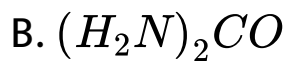
Answer: A::B::C::D



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

A. $HCOOH$



Answer: C::D



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Single Correct Answer Type

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



II. $-SO_3H$

III. $-COOR$

IV. $-COCl$

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

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

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

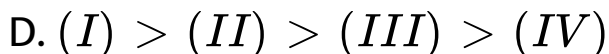
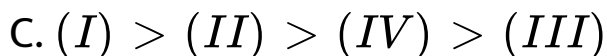
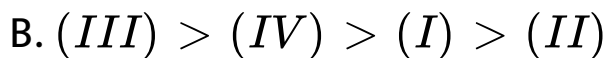
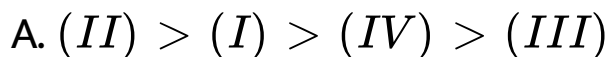
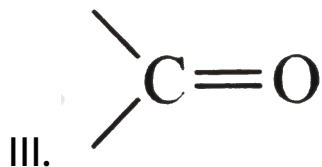
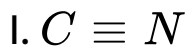
D. $(IV) > (III) > (I) > (II)$

Answer: B



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



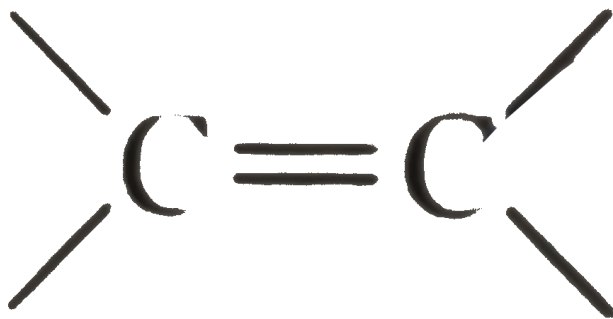
Answer: A



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

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



III.

IV.

$-NH_2$

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

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

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

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

Answer: C



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4. The number of 1° , 2° , 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



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5. The number of 1° , 2° , 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



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6. The number of σ - and π -bond in hexan-2,4-diol, respectively, is:

A. 18,2

B. 17,2

C. 17,1

D. 18,1

Answer: B



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7. The number of σ - and π -bond in 5-oxohexanoic acid, respectively, is :

A. 18,2

B. 18,1

C. 17,2

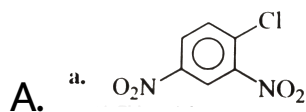
D. 17,1

Answer: A

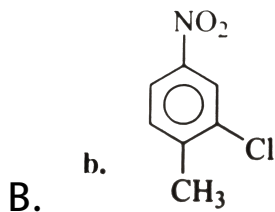


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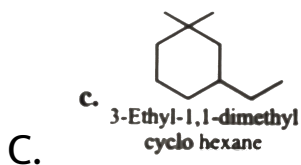
8. Which of the following is correctly named?



4-chloro-1,3-dinitro benzene

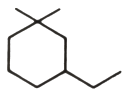


4-methyl-5-chloronitrobenzene



D.

d.



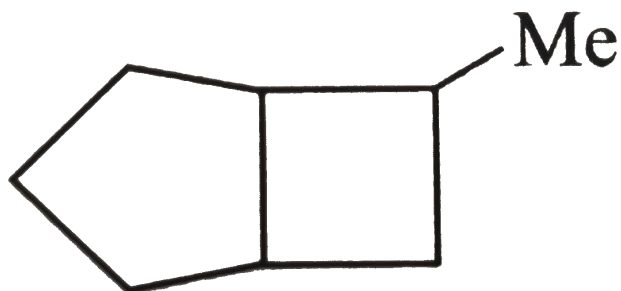
1-Ethyl-3,3-dimethyl
cyclohexane

Answer: C



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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

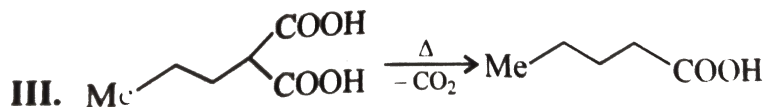
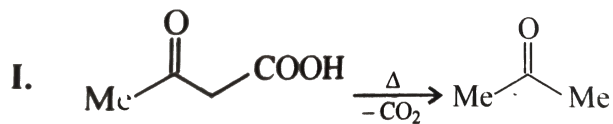
D. 3-Methyl bicyclo [3.2.0] heptane

Answer: A



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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

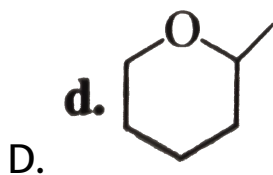
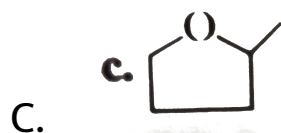
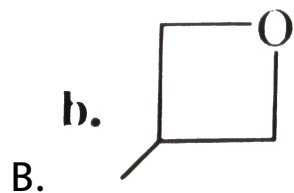
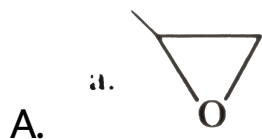
D. I, II

Answer: B



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11. Which of the following is oxetane?

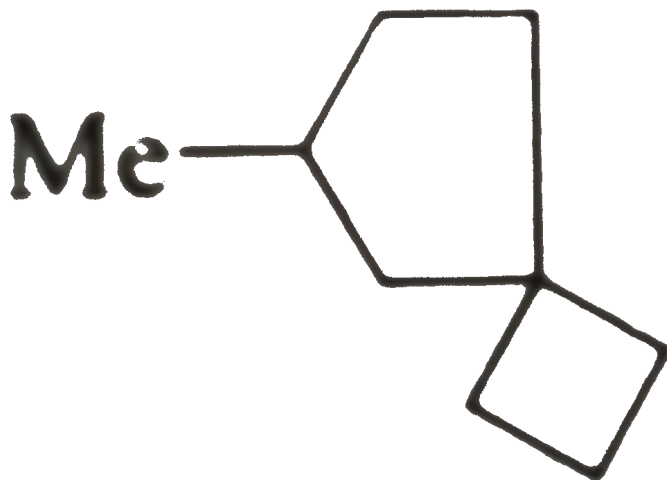


Answer: B



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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

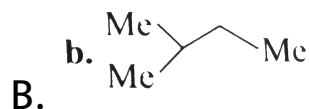
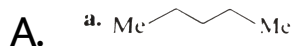
Answer: C

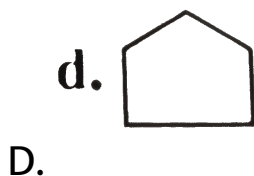
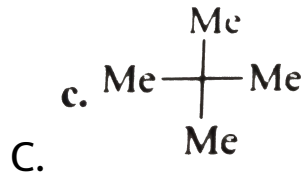


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13. An alkane (*A*) having a molecular mass of 72 produces one monochlorination product.

Compound (*A*) is:

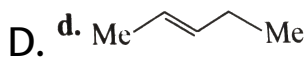
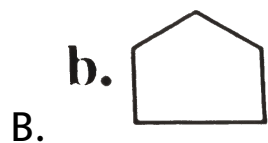
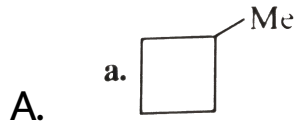




Answer: C

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



Answer: B



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15. Which of the following the following in a 3^o amine?

- A. Propan-2-amine
- B. *N*-Methyl ethanamine
- C. Allyl amine
- D. *N,N*-Diethyl butan-1-amine

Answer: D



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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. isoamyl alcohol

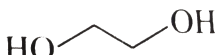
Answer: B

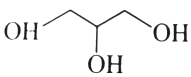


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17. Which of the following is zeronone?

A. *MeOH*

B. **b.** 

C. **c.** 

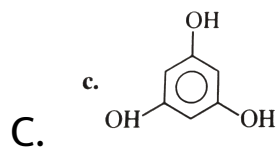
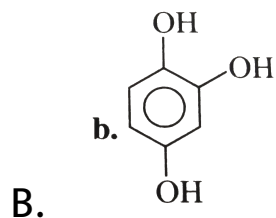
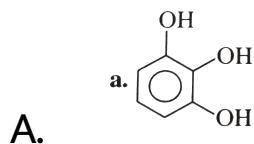
D. *EtOH*

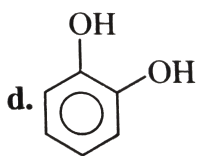
Answer: A



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18. Which of the following is pyrogallol?





D.

Answer: A



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

A. 3-Chloro

B. Cyclo

C. ane

D. -ol

Answer: B



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

A. 2-Chloro-

B. -3- Methyl

C. -an(e)

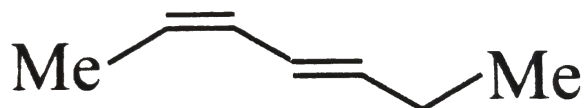
D. oic acid

Answer: C



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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



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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



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

A. 2-Methyl butane

B. Butane

C. 2,2-Dimethyl butane

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

Answer: B



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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

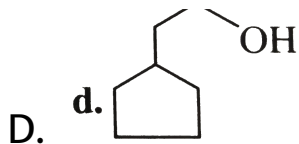
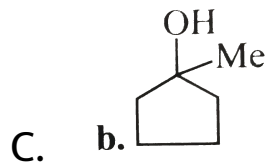
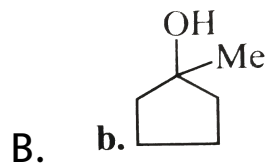
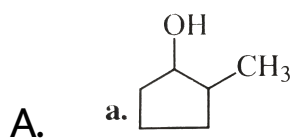
D. But-1-yn-3-ene

Answer: C



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



Answer: C



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26. The *IUPAC* name of acrolein is:

A. But-2-enal

B. Prop-2-enal

C. But-3-enal

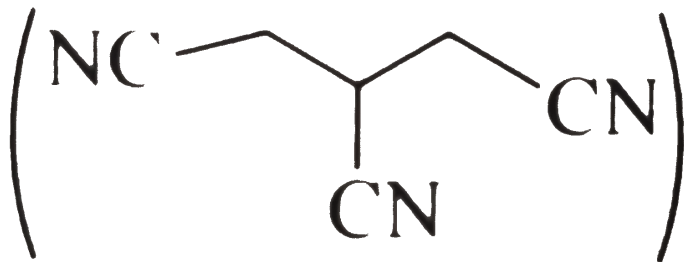
D. 2-Methyl prop-2-enal

Answer: B



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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



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

- A. Methyl isocyanide
- B. Acetonitrile
- C. Methyl carbamide
- D. Acetonitrile

Answer: D



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29. The *IUPAC* name of *PhCN* is :

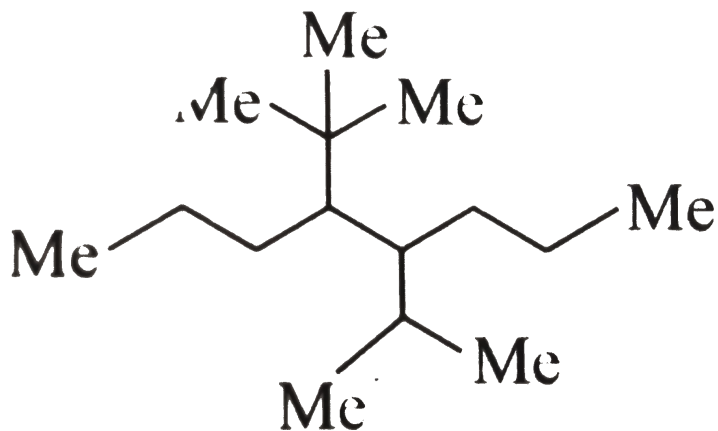
- A. Phenyl cyanide
- B. Benzonitrile
- C. Benzene carbonitrile
- D. All

Answer: C



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30. Give the name of :



- A. 2,2-Dimethyl-3-propyl-4-isopropyl heptane
- B. 4-isopropyl-5-t-butyl octane
- C. 4-t-butyl-5-isopropyl octane
- D. 2-Methyl-3-propyl-4-isopropyl heptane

Answer: C



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

A. All members have a general formula.

B. All members have the same functional group.

C. All members have the same chemical properties.

D. All members have the same physical properties.

Answer: D



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

A. Neppentane

B. Isopentane

C. Pentane

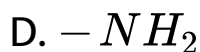
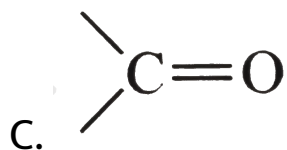
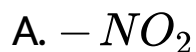
D. 2,2-Dimethyl betane

Answer: A



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



Answer: A



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34. The *IUPAC* name of

$(CH_3)_3C - CH = CH_2$ is:

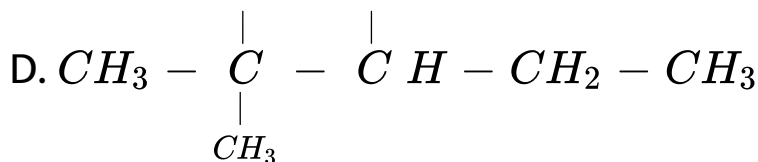
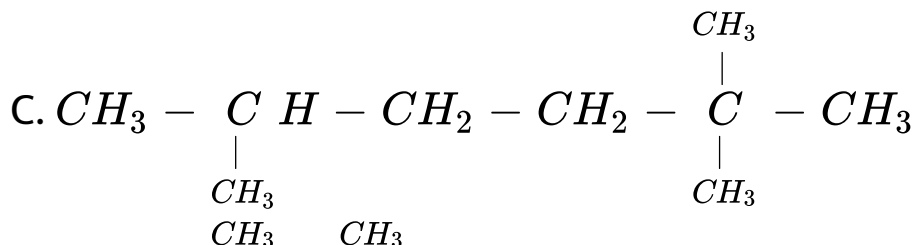
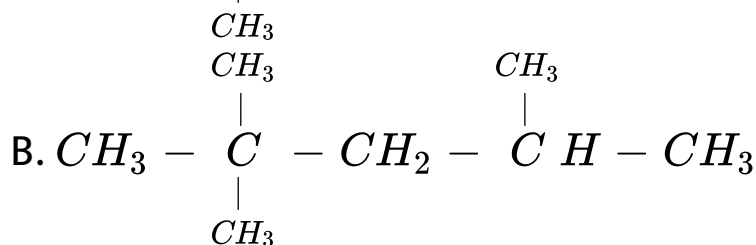
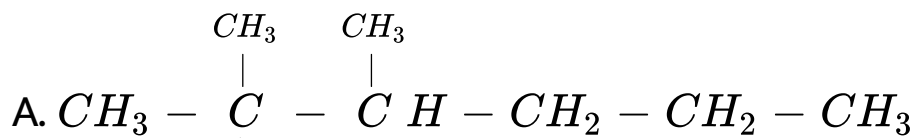
- A. 2,2-Dimethyl but-3-ene
- B. 2,2-Dimethyl pent-4-ene
- C. 3,3-Dimethyl but-1-ene
- D. Hex-1-ene

Answer: C



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35. Which compound is 2,2,3-trimethyl hexane?



Answer: A



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36. The bond between carbon atom (1) and carbon atom (2) in the compound $N \equiv C - CH = CH_2$ involves the hybridisation as :

A. sp^2 and sp^2

B. sp^3 and sp

C. sp and sp^2

D. sp and sp

Answer: C



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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



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38. The number of σ -and π -bond in 1-buten-3-yne is:

A. 5σ and 5π

B. 7σ and 3π

C. 8σ and 2π

D. 6σ and 4π

Answer: B



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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

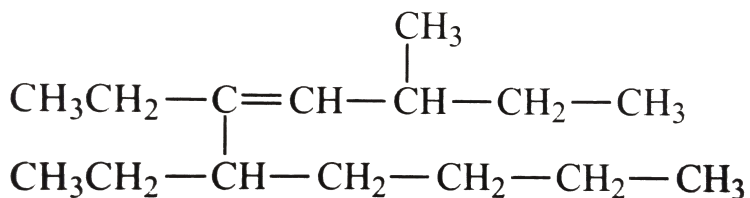
D. 2-Methyl pentane

Answer: D



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



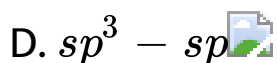
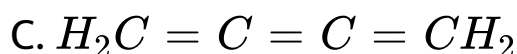
- A. 5,6-Dimethyl-3-methyl dec-4-ene
- B. 5,6-Dimethyl-8-methyl dec-6-ene
- C. 6-Butyl-5-ethyl-3-methyl oct-4-ene
- D. 2,4,5-Triethyl-3-nonene

Answer: A



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

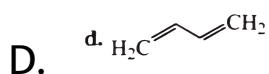
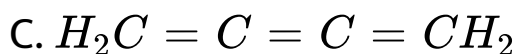
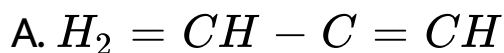


Answer: C



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42. Which of the following represents the given mode of hybridisation $sp^2 - sp^2 - sp - sp$ from left to right?



Answer: A



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43. The *IUPAC* name of C_6H_5COCl is :

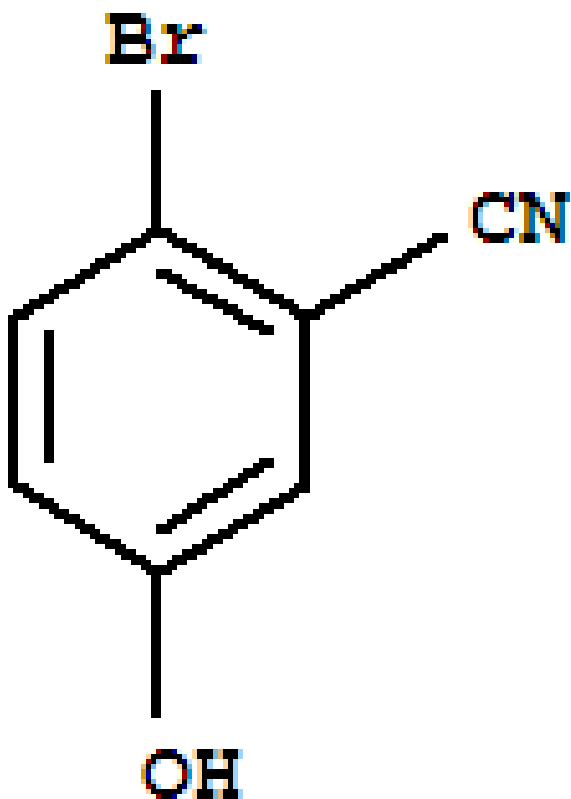
- A. Benzoyl chloride
- B. Benzene chloro ketone
- C. Benzene carbonyl chloride
- D. Chlorophenyl ketone

Answer: A



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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



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Assertion Reasoning Type

1. Assertion (*A*) : Pentane and 2-methyl pentane are homologous.

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



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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

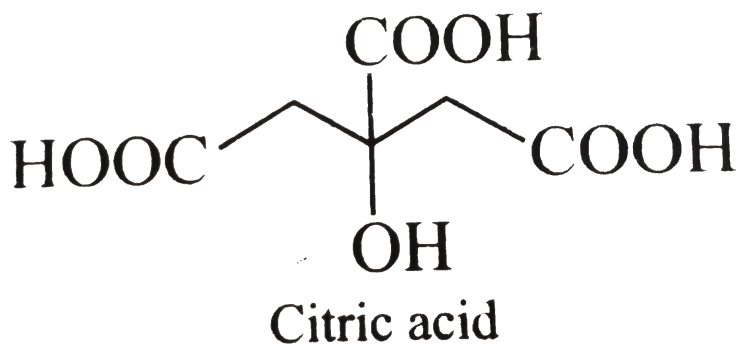


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3. Assertion (*A*) : The *IUPAC* name of the citric acid is 2-hydroxy-propane-1,2,3-tricarboxylic acid

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

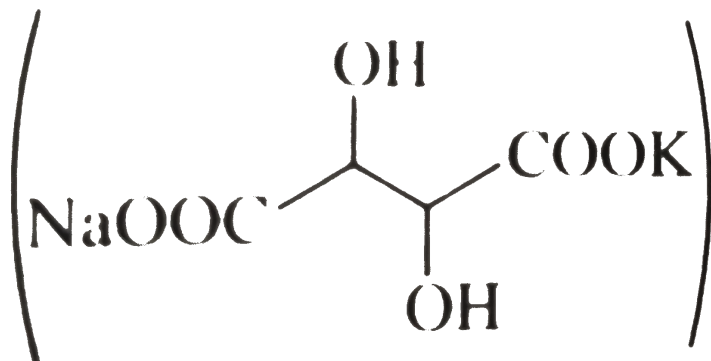


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4. Assertion (*A*) : Rochelle's salt is used as a complexing agent in Tollens reagent.

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- dioate.



- 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



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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



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Fill In The Blanks Type

1. The compounds having both sp – and sp^2 - hybridised C atoms is

A. Propene

B. Propdiene

C. Propane

D. Both A and B

Answer: B



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



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3. The terminal C atom in butane ishybridised.

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4. Adiol has two hydroxy1 group on..... C atoms

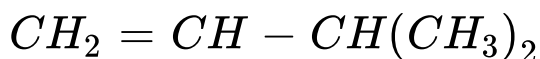
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5. The *IUPAC* name of succinic acid is.....

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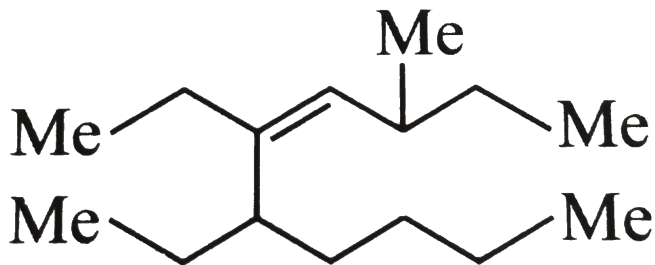
Analytical And Descriptive Type

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



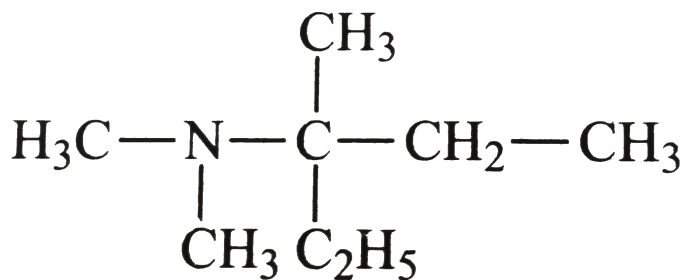
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2. Give the *IUPAC* name of the following compound.



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



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