CHEMISTRY

PHYSICAL, INORGANIC, AND ORGANIC CHEMISTRY

IUPAC NOMENCLATURE & STRUCTURAL ISOMERISM

QUESTION

1. Calculate σ and π-bond in following compounds.

(a)$HC \equiv CCH = CHCH_3$,(b)$CH_2 = C = CHCH_3$

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2. Expand each the following condensed formulae into their complete structural and bond line formulae:

(a)$CH_3CH_2COCH_2CH_3$,(b)$CH_3CH = CH(CH_2)_3CH_3$

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3. For each of the following compounds, write a comdensed formula and also their bond-line formula.

(a) $HOCH_2CH_2CH_2CH(CH_3)CH(CH_3)CH_3$, (b)

$$N \equiv C - \overset{OH}{\overset{|}{C}}H - C \equiv N$$

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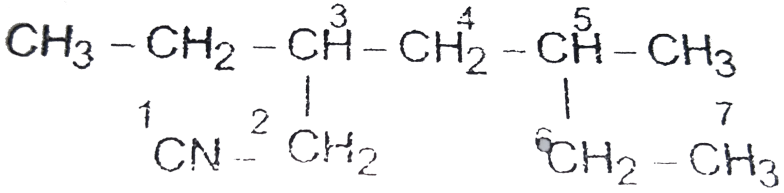
4. Write the $IUPAC$ name of



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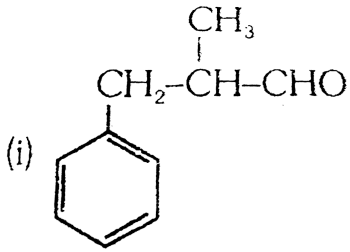
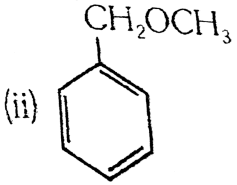
5. Write IUPAC name of the aromatic compounds



(i)



(ii)

(i)

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6. Write the structural formula of:

(a)o-Ethylanisole, (b)p-Nitroaniline,

(c)2, 3-Dibromo-1-phenylpentane , (d)4-Ethyl-1-fluoro-2-nitrobenzene.

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Bord Level Exercise

1. Write the structure of following $IUPAC$ name:

(i)$1,1$-Dibromo-3-ethyl-4-flourohexane , (ii)5-Bromomethyl-6-methylhept-3-ene

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2. Write the structure of following $IUPAC$ name:

(i)2-Methylpentane-2,4-diol , (ii)4-Methylhexane-2-ol

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3. Write the correct $IUPAC$ name of the following:

(i)$H_3C - \underset{CH_3}{\underset{|}{N}} - \underset{CH_3}{\underset{|}{CH}} - CH_3$, (II) $CH_3 - CH_2 - \underset{CH_3}{\underset{|}{CH}} - NH - CH_3$

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4. Write the structure of following $IUPAC$ name:

(i)3-Etylnhexa-1,4-diene , (ii)1-Cyclobutylprop-1-ene

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5. Write the correct $IUPAC$ name of the following:

(i) $H_3C-\underset{Cl}{\underset{|}{CH}}-\underset{Br}{\underset{|}{CH}}-\underset{CH_2CH_3}{\overset{CH_3}{\overset{|}{\underset{|}{C}}}}-SO_3H$, (ii)

$HOOC-CH_2-CH_2-\underset{CH_3}{\underset{|}{CH}}-SO_3H$

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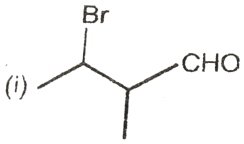
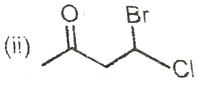
6. Write the correct $IUPAC$ name of the following:





(i)

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7. Write the structure of following $IUPAC$ name:

(i)2-Methoxybutan-1-ol , (ii)4-Chloro-2-methylphenol

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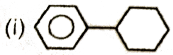
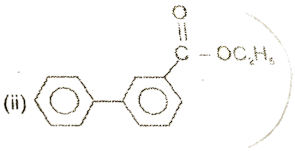
8. Write the correct $IUPAC$ name of the following:





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9. What is isomerism? Give an example.

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10. What is positional isomerism? Give an example.

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11. What is Metamerism? Give an example.

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12. Identify the molecular weight of the compound $'X'$ containing carbon and hydrogen atoms only with 3σ and 2π bonds in one molecule.

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13. Write the ring chain functional isomer of compound But-2-ene are?

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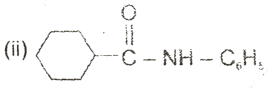
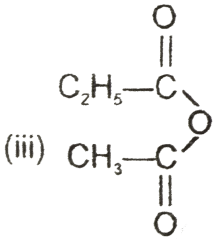
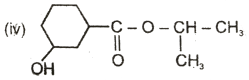
14. Write the correct $IUPAC$ name of the following:

A. $Cl - \overset{\overset{O}{||}}{C} - \overset{\overset{CH_3}{|}}{C} = CH - \overset{\overset{CH_3}{|}}{CH} - CH_2 - CH_3$

B. 

C. 

D. 

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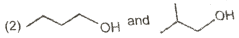
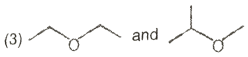
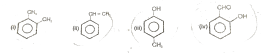
15. Identify the relationship between the give compounds.

A. 

B. 

C. 

D. CH_2COOCH_3 & CH_3COCH_2OH

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16. Write down the $IUPAC$ name of the following compound:

(a)Methyl benzoate , (ii)Phthallic acid , (iii)Neopentane , (iv)Isoctane

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17. What is the type of hybridisation of each carbon in the following:

A. CH_3Cl

B. $(CH_3)_2CO$

C. $CH_3C = N$

D. $HCONH_3$

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18. Which of the following represents the correct $IUPAC$ name of the compounds concerned?

A. 2, 2-Dimethylpentane or 1, 2-Dimethylpentane

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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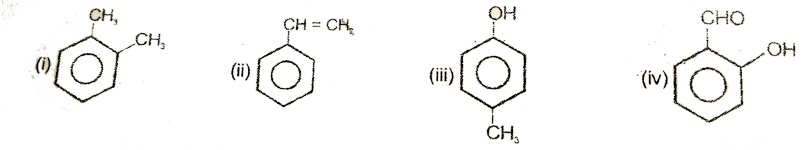
19. Write common & $IUPAC$ name of the following structure:



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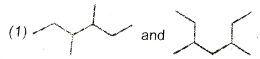
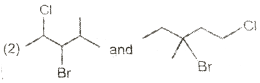
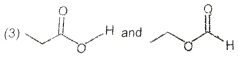
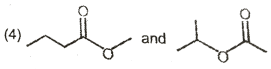
20. Identify the relationship between the give compounds.

A. 

B. 

C. 

D. 

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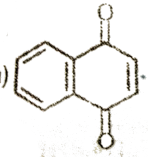
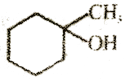
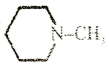
Exercise-1 Part-1 Section(A)

1. Write the number of σ and π bonds in the following molecules?

(a) 

(b) 

(c) 

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2. Find the number of $1^\circ, 2^\circ$ & 3° hydrogen atom in the following compounds

(a)$CH_3 - \underset{\underset{CH_3}{|}}{CH} - CH_3$, (b)$CH_3 - CH_2 - CH_3$, (c) $CH_3 - CH_2 - CH_2 - CH_3$

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3. Find the hybridization state of each carbon atoms in following compound?

$CH_2 = C = CH - CH_2 - C = C - CH_2 - NH_2$

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4. Expand each the following condensed formulae into their complete structural and bond line formulae:

A. $HOCH_2CH_2NH_2$

B. $CH_2(CH_2)_3OH$

C. $CH_3CH_2COCH_2CH_3$

D. $CH_3CH = CH(CH_2)_3CH_3$

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

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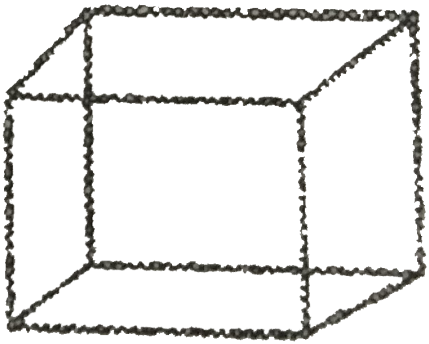
5. Find DU of following compound:-

(A)C_8H_{12} , (B)C_5H_{10} , (C)C_7H_8 , (D)

(D)



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6. Find DU of following compound:-

(a) C_6H_6O , (b)C_6H_5I , (c)C_6H_6ClBrO , (d)C_5H_9N

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7. Draw formulae for the first four members of each homologous series begining with the following.

(a)$H-COOH$, (b)$H-CH=CH_2$, (c)$CH_3-\overset{\overset{O}{||}}{C}-CH_3$

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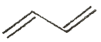
8. Classify the following compounds as homocyclic, heterocyclic, alicyclic,aromatic,saturated and unsaturated.

(a)  (b)  (c)  (d) 

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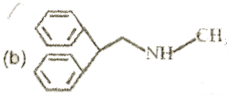
9. Indicate the following as 1° , 2° & 3° amines.

(a)  (b)  (c)  (d) 

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10. Indicate the following as 1°, 2° & 3° alcohol.

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Exercise-1 Part-1 Section(B)

1. Write $IUPAC$ name of the following compounds:

(a) $CH_3 - \overset{CH_3}{\overset{|}{C}}H - CH_3$, (b) $CH_3 - \overset{CH_3}{\overset{|}{C}}H - \underset{CH_3}{\underset{|}{C}}H - CH_3$, (c) $CH_3 - \overset{CH_3}{\overset{|}{C}}H - CH_2 - CH_3$, (d) $CH_3 - \overset{CH_3}{\overset{|}{\underset{CH_3}{\underset{|}{C}}}} - CH_2 - CH_3$

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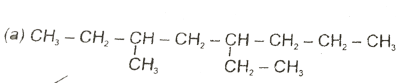
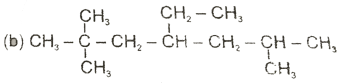
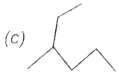
2. Write $IUPAC$ name of the following compounds:







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3. Write correct $IUPAC$ name of the following

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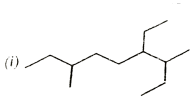
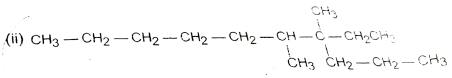
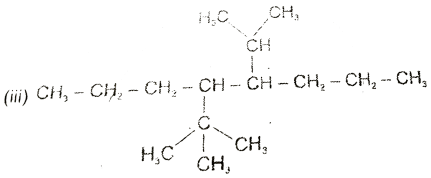
4. Write the correct $IUPAC$ name of the following compounds.







(i)

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5. Write structures of the following $IUPAC$ name.

(i)1, 3-Dicyclopentyl propane , (ii)1-Methyl-4-propylcyclohexane

(iii)2-Ethyl-1, 1-dimethylcyclopentane

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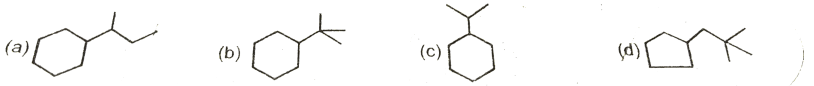
6. Write $IUPAC$ names of the following hydrocarbon (use common naming for hydrocarbon group.



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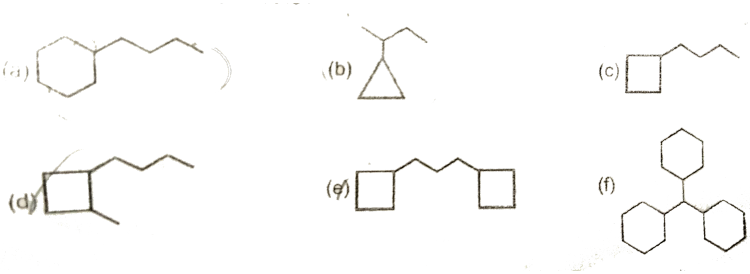
7. Identify the parent chain in the following compounds as ring or side chain



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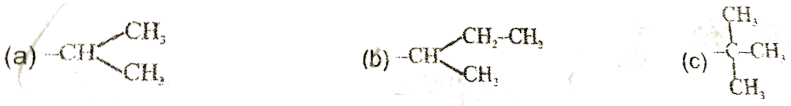
8. Write the common name of the following alkyl groups.



(c) $-\overset{\overset{CH_3}{|}}{\underset{\underset{CH_3}{|}}{C}}-CH_3$

(d) $-CH_2-CH_3$, (e) $CH_3-CH_2-CH_2-$

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Exercise-1 Part-1 Section(C)

1. Write the general formula of alkenes. Give $IUPAC$ names of first three members.

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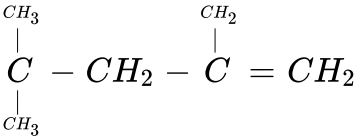
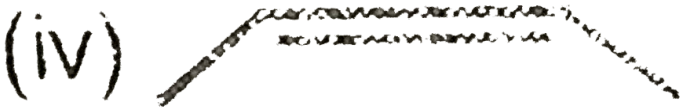
2. Write $IUPAC$ name of the following:

(i) $(CH_3)_3C-CH=CH_2$

(ii) $CH_2=CH-CH=CH_2$

$CH_3-CH_2-CH_2$



(iv) 

(iv)

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3. Draw the bond line structure of the following compound.

(a) 2-Methyl-3-heptene " "

(b) 2,6-Dimethyl hept -1, 5-diene

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4. Write $IUPAC$ name of the following

(i) , (ii)

$CH_3 - \overset{CH_3}{\overset{|}{C}}H - C \equiv CH$, (iii)$CH_3 - C \equiv C - \underset{CH_3}{\underset{|}{C}}H - CH_3$

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5. Draw structure of following $IUPAC$ names.

(i)Hexa-2, 4-diyne , (ii)Pent-3-ene-1-yne

(iii)Pent-1-en-4-yne , (iv)Pent-1-en-3-yne

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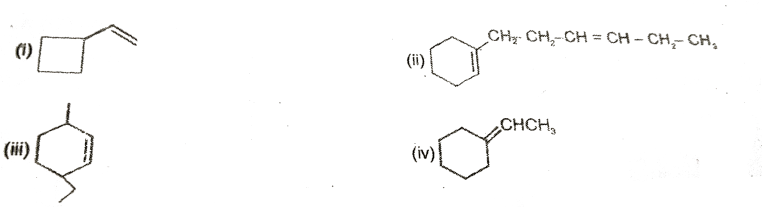
6. Write the $IUPAC$ name of the following



(i)

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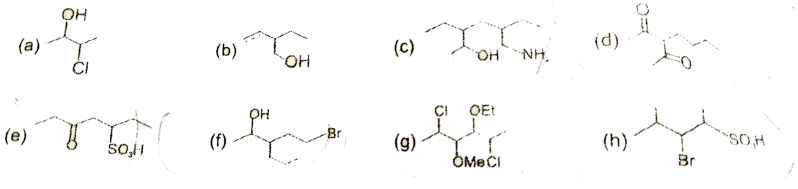
Exercise-1 Part-1 Section(D)

1. Write the $IUPAC$ of the following compounds.



(a)

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2. Draw the structures of each of the followings.

(a)Butan-1-ol , (b)Butane-2-thiol , (c)Pentan-2-amine , (d)Pentane-2-one , (e)3-Chloropentan-1-ol , (f)Hexan-2, 4-dione

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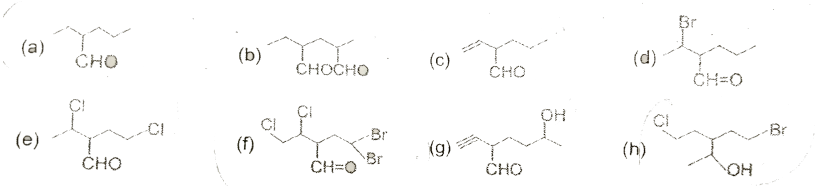
Exercise-1 Part-1 Section(E)

1. Select the longest continous chain in each of the following molecules.



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2. Write the structure of the following compounds:

(a)3-Hydroxypentane-2-sulphonic acid. , (b)3-Oxopentanoic acid

(c)3-Chloromethylpentanoic acid , (d)2-Aminobutanamide

(e)3-Bromobutanoyl chloride , (f)Ethyl methanoate

(g)Cyclohexyl ethanoate , (h)Phemul ethanoate

(i)2-Chloroethyl propanoate , (j)Diethyl pentanedioate

(k)Dimethyl 3-oxopentanediate , (l)Methyl cyclohexanecarboxylate

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3. Write the structure of the following compounds:

(a)Butanamide , (b)N-methylethanamide

(c)Cyclopropanecarboxylic anhydride , (d)Cyclopropylbutaneoate

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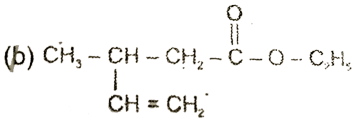
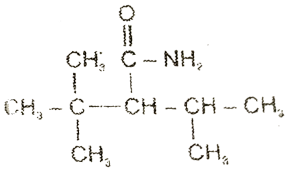
4. Write $IUPAC$ Name:

(a) $CH_3CH_2 - \underset{\underset{CH_3}{|}}{\overset{\overset{CH_2}{|}}{CH}} - \overset{\overset{O}{||}}{C} - OCH_3$,

(b) 

(c) 

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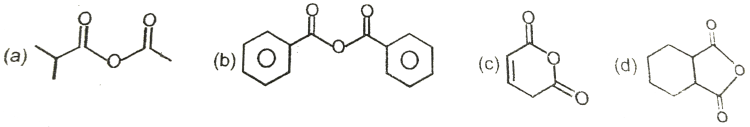
5. Write $IUPAC$ names of following compounds.



(a)

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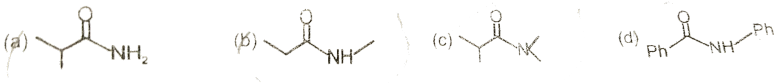
6. Write $IUPAC$ names of following compounds.



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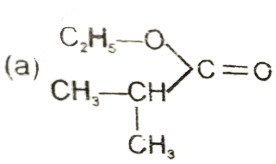
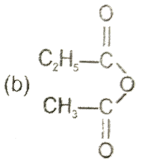
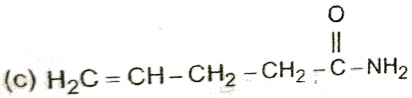
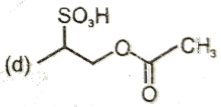
7. Write the correct $IUPAC$ names of following:









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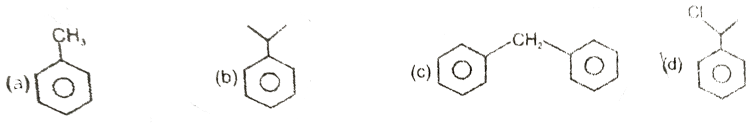
Exercise-1 Part-1 Section(F)

1. Write $IUPAC$ name of the following:



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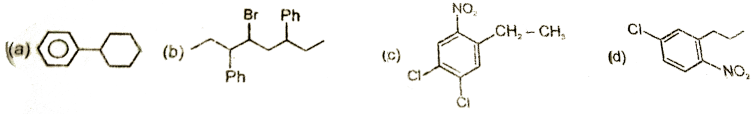
2. Write the correct $IUPAC$ name of the following:



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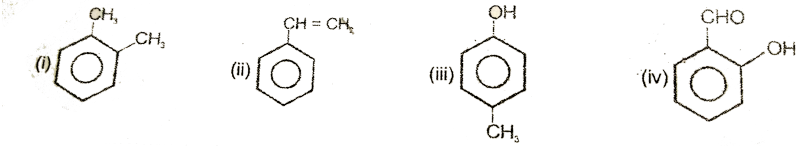
3. Write common & $IUPAC$ name of the following structure:



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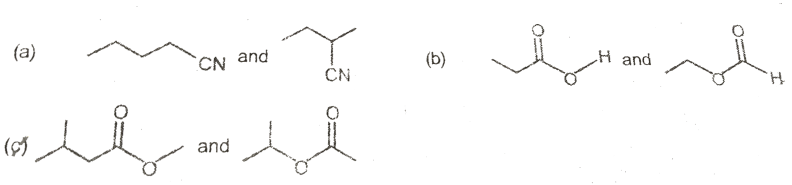
Exercise-1 Part-1 Section(G)

1. Identify the relationship between the give compounds.



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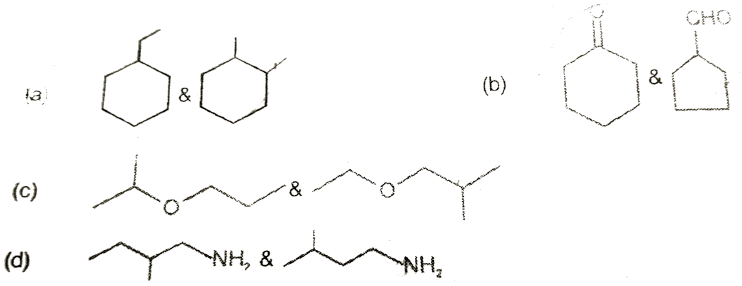
2. Identify the relationship between the give compounds.



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Exercise-1 Part-1 Section(H)

1. Draw all structurally isomeric alkenes with molecular formula C_4H_8

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2. Draw all structurally isomeric 2° chlorides with molecular formula $C_5H_{11}Cl$

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3. Draw all structurally isomeric benzene containing isomers with molecular formula C_7H_3O

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4. Draw all structurally isomeric cyclic bromides with molecular formula $C_4H_7Br.$

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5. Write the ring chain functional isomer of compound But-2-ene are?

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Exercise-1 Part-2 Section(A)

1. Number of bonds in given compound is:

$CH_2 = C = CH - C = CH$

A. 10

B. 12

C. 14

D. 16

Answer: B

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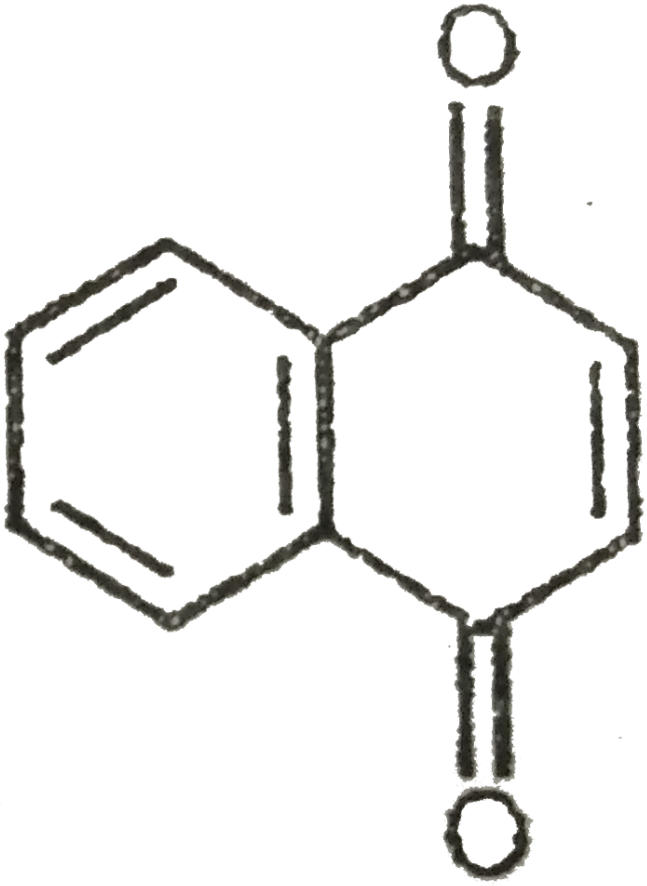
2. Molecular formula of naphthaquinone



is

A. $C_{12}H_8O_2$

B. $C_{11}H_6O_2$

C. $C_{10}H_6O_2$

D. $C_{10}H_8O_2$

Answer: C

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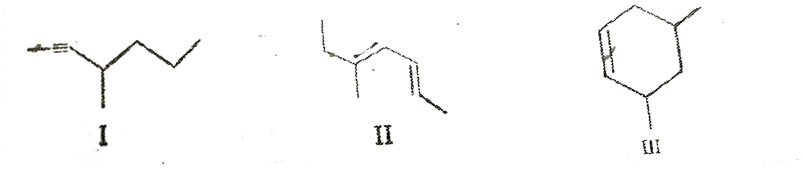
3. (a)



Incorrect statement for the above structure:

A. I,II & II have C_nH_{2n-2} general formula

B. I,II & II have same empirical formula

C. I,II are identical and homologue of compound III.

D. I,II & II have same molecule formula

Answer: C

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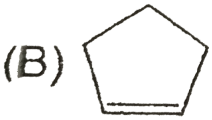
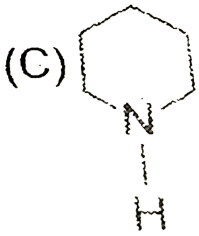
4. Which of the following is not an alicyclic compound?

A. 

B. 

C. 

D. 

Answer: D

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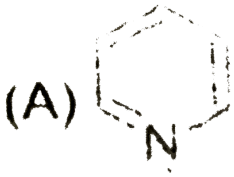
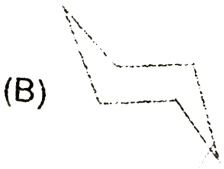
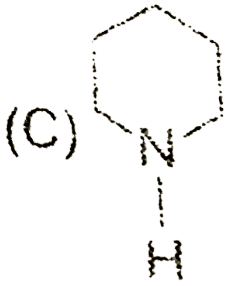
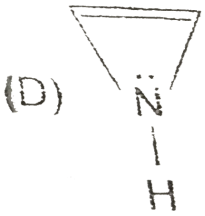
5. The saturated heterocyclic compound is:

A. 

B. 

C. 

D. 

Answer: C

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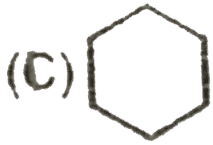
6. Which of the following compound is unsaturated hydrocarbon?

A. $CH_3 - \overset{\overset{O}{||}}{C} - CH_3$

B. $CH_3 - C = N$

C. 

D. 

Answer: D

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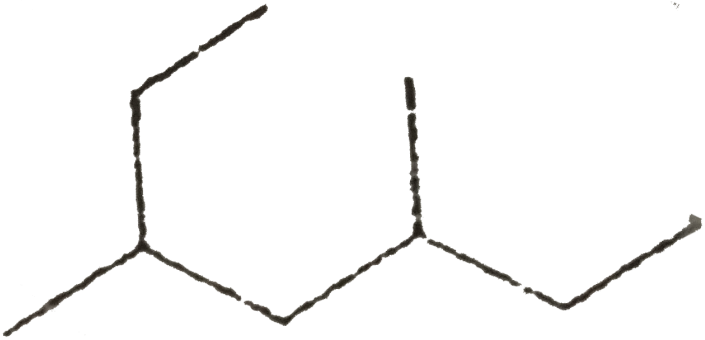
Exercise-1 Part-2 Section(B)

1. The correct $IUPAC$ name of the alkane



is

A. 2-Ethyl-4-methylhexane

B. 5-Ethyl-3-methylhexane

C. 3, 5-Dimethylheptane

D. 3, 5-Dimethylhexane

Answer: C

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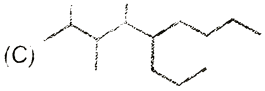
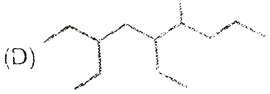
2. The correct structure of 6-Ethyl-2, 3, 5-trimethylnonane is:

A. 

B. 

C. 

D. 

Answer: A

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3. The correct $IUPAC$ name of the following compound is:

$$F - \overset{\overset{H}{|}}{\underset{\underset{I}{|}}{C}} - \overset{\overset{NO_2}{|}}{\underset{\underset{Br}{|}}{C}} - Et$$

A. 1-Bromo-1-ethyl-2-fluoro-2-iodo-1-nitroethane.

B. 3-Bromo-4-fluoro-4-iodo-3-nitrobutane.

C. 2-Bromo-1-fluoro-1-iodo-2-nitrobutane.

D. 1-Fluoro-1-iodo-2-bromo-2-ethyl-2-nitroethane.

Answer: C

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4. A student names a certain compound as $2,3$-diethylbutane. Its correct $IUPAC$ names is:

A. $2,3$-Dimethylhexane

B. $3,4$-Dimethylhexane

C. 2-Ethyl-3-methpentane

D. 2-Ethylbutane

Answer: B

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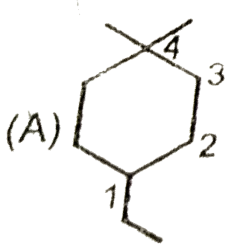
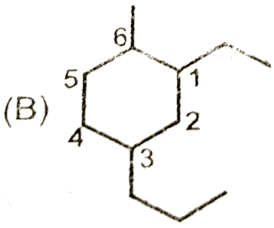
5. In which of the following compound $IUPAC$ numbering is correct :

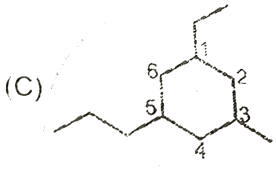
A.



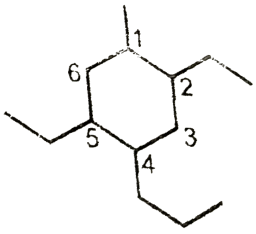
B.



C.



D.



Answer: C

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Exercise-1 Part-2 Section(C)

1. Select the structure with correct numbering in the chain:

A. $\overset{5}{C}H_2 = \overset{4}{C}H - \overset{3}{C}H_2 - \overset{2}{C} = \overset{1}{C}H$

B. $\overset{1}{C}H_3 - \overset{2}{C}H = \overset{3}{C}H - \overset{4}{C}H_2 - \overset{5}{C} = \overset{6}{C}H$

C. $\overset{7}{C}H_2 = \overset{6}{C}H - \overset{5}{C}H = \overset{4}{C}H - \overset{3}{C}H_2 - \overset{2}{C}H = \overset{1}{C}H_2$

D. $\overset{1}{C}H_2 = \overset{2}{C}H - \overset{3}{C}H = \overset{4}{C}H - \overset{5}{C}H_2 - \overset{6}{C} = \overset{7}{C}H$

Answer: D

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2. The correct $IUPAC$ name of the compound

$$CH_2 = CH - CH_2 - \overset{C_2H_5}{\underset{|}{C}}H - CH_3$$

A. 4-Ethylpent-1-ene

B. 2-Ethylpent-4-ene

C. 4-Methylhex-1-ene

D. 3-Methylhex-1-ene

Answer: C

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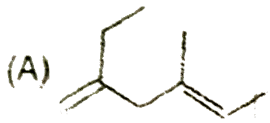
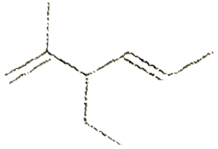
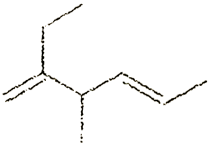
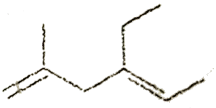
3. The correct structure of 2-Ethyl-3-methylhexa-1, 4-diene:

A. 

B. (B) 

C. (C) 

D. (D) 

Answer: C

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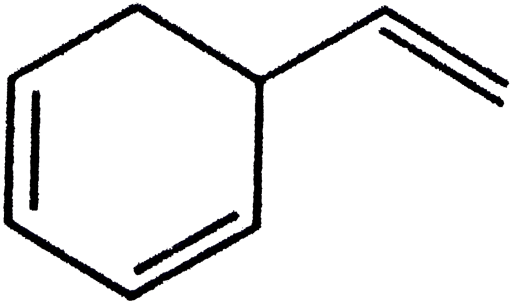
4. The correct $IUPAC$ name of the compound



A. 1-Ethenylcycohexa-2, 4-diene

B. 5-Ethenylcyclohexa-1, 3-diene

C. 6-Ethenylcyclohexa-1, 3-diene

D. Cyclohexa-2, 4-dienylethene

Answer: B

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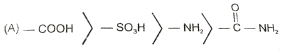
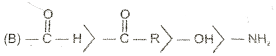
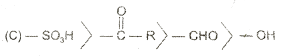
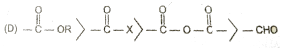
Exercise-1 Part-2 Section(D)

1. Which of the following is a correct priority order of functional groups ?

A. 

B. 

C. 

D. 

Answer: B

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2. The $IUPAC$ name of

$$CH_3 - \underset{\underset{OH}{|}}{CH} - CH_2 - CH_2 - CH_2 - \overset{\overset{Br}{|}}{\underset{\underset{Br}{|}}{C}} - CH_3$$ is:

A. 6, 6-Dibromoheptan-2-ol

B. 2, 2-Dibromoheptane-6-ol

C. 6, 6-Dibromoheptan-2-al

D. None of these

Answer: A

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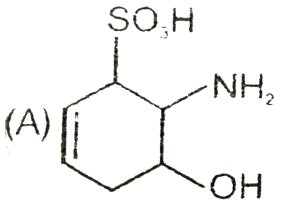
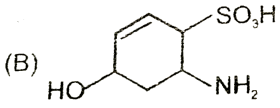
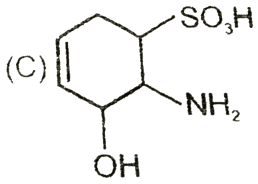
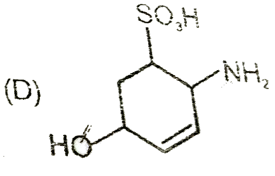
3. The correct structure of 6-Amino-4-hydroxycylohex-2-ene-1-sulphonic acid.

A. 

B. 

C. 

D. 

Answer: B

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4. The correct $IUPAC$ name of the given compound is

$$I-\underset{\underset{F}{|}}{C}=\underset{\underset{Cl}{|}}{C}-C\equiv C-OCH_2$$

A. 3-Chloro-1-fluoro-1-iodo-4-methoxybut-1-en-3-yne

B. 4-Methoxy-2-chloro-1-fluoro-1-iodobutenyne

C. 3-Chloro-4-fluoro-4-iodo-1-methoxybutenyne

D. 2-Chloro-1-fluoro-1-iodo-4-methoxybutenyne

Answer: D

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Exercise-1 Part-2 Section(E)

1. The $IUPAC$ name of the following is :

$$CH_3CH=CH-CH_2-\underset{\underset{NH_2}{|}}{CH}-CH_2COOH$$

A. 3-Aminoheptlenebutanal

B. 5-Aminohex-2-enecarboxylic acid

C. 3-Aminohept-4-enoic acid

D. 5-Aminohept-2-enoic acid

Answer: A

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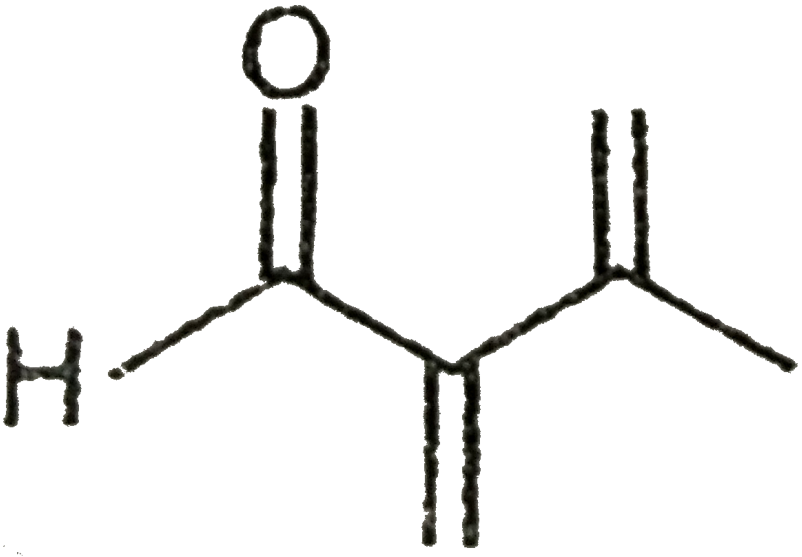
2.  is names as:

A. 2, 3-Dimethylenebutanal

B. 3-Methyl-2-methylenebut-3-enone

C. 3-Methyl-2-methylenebut-3-enal

D. 2, 3-Dimenthylenebutanone

Answer: C

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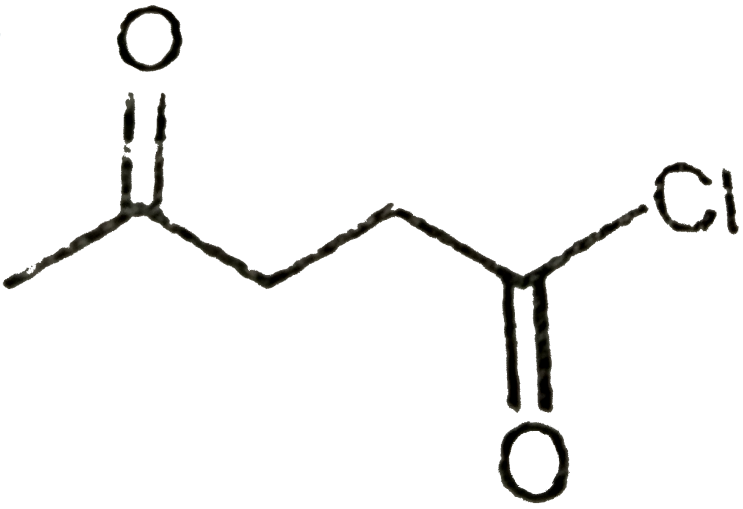
3. The correct $IUPAC$ name of compound is:



A. 1-Chloropentane-1, 4-dione

B. 4-Chlorocarbonylbutan-2-one

C. 4-Oxopentanoyl chloride

D. 3-Oxobutanecarbonyl chloride

Answer: C

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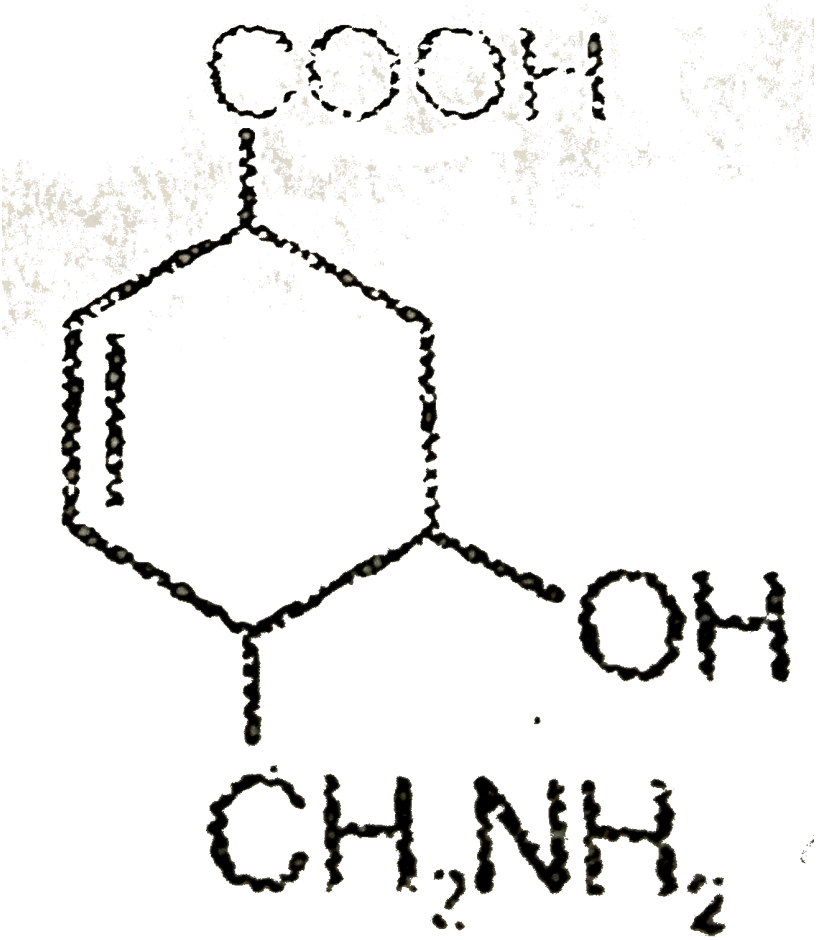
4. The correct $IUPAC$ name of the following compound is:



A. 4-Aminomethyl-3-hydroxyclohex-5-ene-1-carboxylic acid

B. 2-Aminomethyl-5-carboxycyclohex-3-en-1-ol

C. 4-Aminomethyl-5-hydroxycyclohex-2-ene-1-carboxylic acid

D. 3-Hydroxy-4-aminomethylcyclohex-5-en-1-oic acid

Answer: C

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5. $IUPAC$ name of given compound is:

$$H - \underset{\underset{O}{||}}{C} - CH_2 - \underset{\underset{CH_3}{|}}{CH} - C = N$$

A. 3-Carbonitrile-3-methyl butanal

B. 3-Formyl-2-methyl propane nitrile

C. 3-Cyanobutanal

D. 2-Methyl-4-oxobutane nitrile

Answer: D

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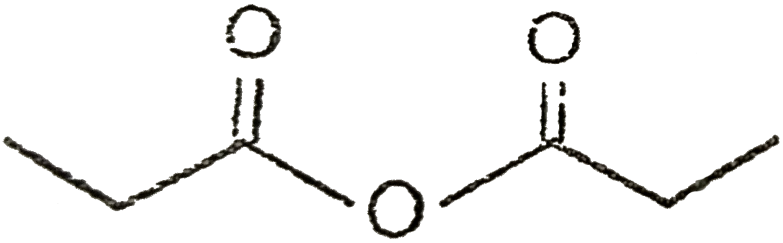
6. The $IUPAC$ name of the compound is:



A. Propanoic anhydride

B. Dipropanoic anhydride

C. Ethoxy propanoic acid

D. 1-Oxopropyl propanoate

Answer: A

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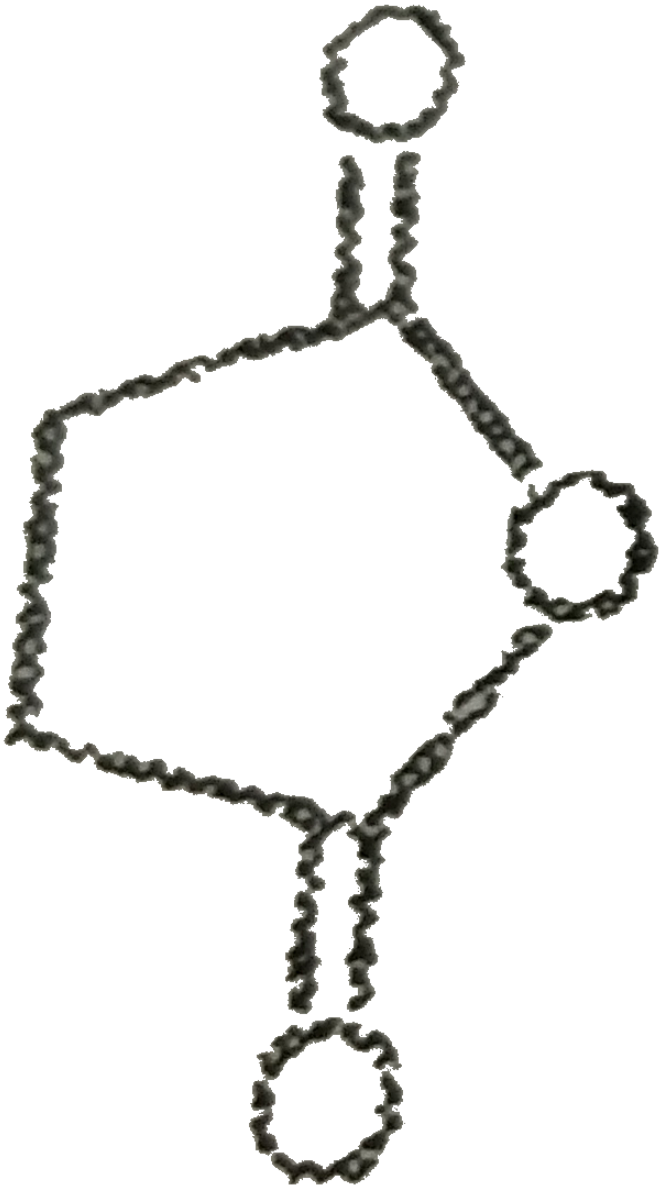
7. The $IUPAC$ name of the compound is:



A. `Cyclobutanedioic anhydride

B. Butanedicarboxylic anhydride

C. Cyclobutanedicarboxylic anhydride

D. Butanedioic anhydride

Answer: D

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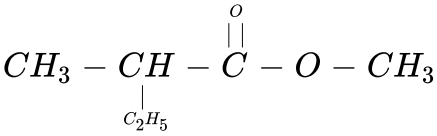
8. The correct $IUPAC$ name of the following compound is:



A. Methyl-2-ethylpropanoate

B. Methyl butane -2-carboxylate

C. Methyl-2-methylbutanoate

D. Methoxypentanone

Answer: C

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9. $IUPAC$ name of the compound $BrCH_2 - \underset{\underset{CONH_2}{|}}{CH} - CO - CH_2 - CH_2CH_3$ is

A. 2-Bromomethyl-3-oxohexanamide

B. 1-Bromo-2-amido-3-oxohexane

C. 1-Bromo-2-amido-n-propylketone

D. 3-Bromo-2-proponyl-propanamide

Answer: A

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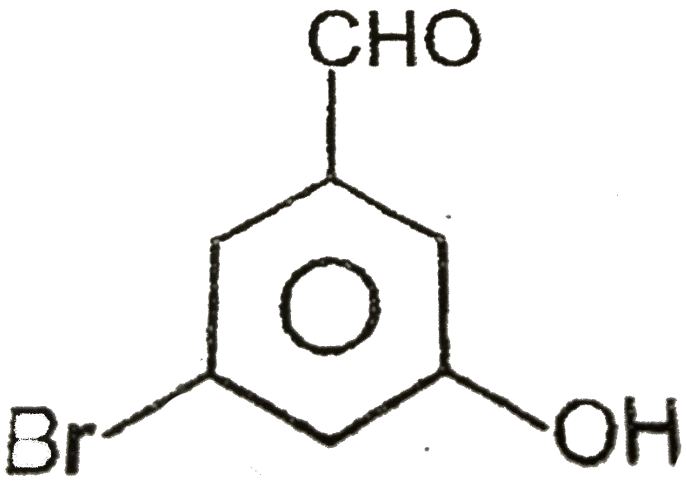
Exercise-1 Part-2 Section(F)

1. The $IUPAC$ name of the following compound is:



A. 5-Bromo-3-hydroxybenzenecarbaldehyde

B. 3-Bromo-5-formylphenol

C. 3-Bromo-5-hydroxybenzenecarbaldehyde

D. 1-Bromo-3-formyl-5-hydroxybenzene

Answer: C

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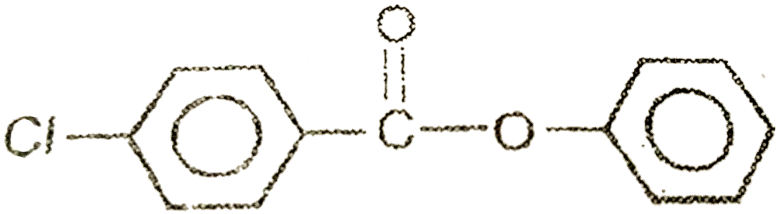
2. $IUPAC$ name of



A. 4-Chlorophenyl benzoate

B. Phenyl-4-chlorobenzenecarboxylate.

C. Benzyl-4-chlorobenzenecarboxylate.

D. 4-Chloro diphenlcarboxylate

Answer: B

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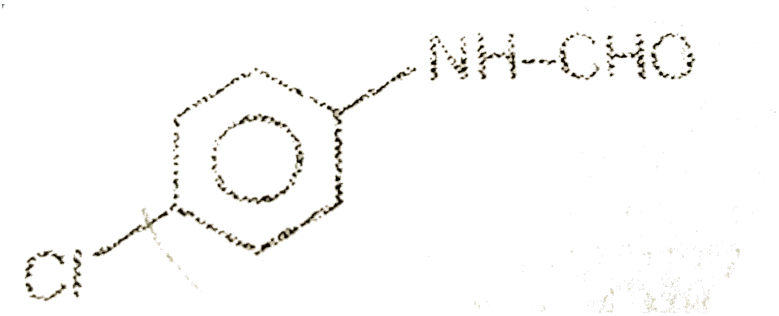
3. The correct $IUPAC$ name of the compound.



A. N-Formyl-4-chlorobenzenamine

B. N-Formyl-4-chloroaniline

C. N-(4-chlorophenyl)methanamide

D. N-(Parachlorophenyl)-N-formylaniline

Answer: C

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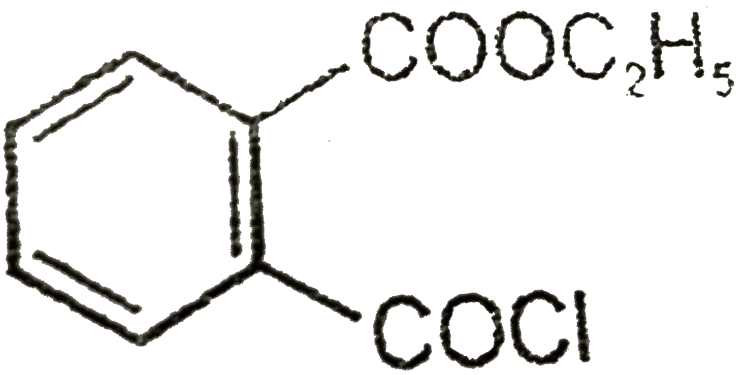
4. $IUPAC$ name of the compound



A. 2-Chlorocarbonyl ethylbenzene carboxylate

B. 2-Carboxyethylbenzoyl chloride

C. Ethyl 2-(chlorocarbonyl)benzenecarboxylate

D. Ethyl 1-(chlorocarbonyl)benzenecarboxylate

Answer: C

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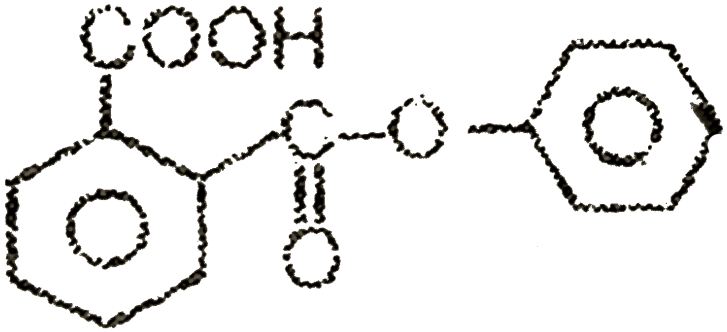
5. The correct $IUPAC$ name of the compound



A. 2-Phenoxycarbonylbenzenecarboxylic acid

B. Phenyl-2-carboxybenecarboxylate

C. 2-Benzoyloxybenzenecarboxylic acid

D. 2-Benzyloxycarbonylbenzenecarboxylic acid

Answer: A

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Exercise-1 Part-2 Section(G)

1. Isomers have essentially identical.

A. Structural formula

B. Chemical properties

C. Molecular formula

D. Physical properties

Answer: C

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2. Compound with same molecular formula but different structure formula are called:

A. Isomers

B. Isotopes

C. Isobars

D. Isoelectric

Answer: A

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3. What is the correct relationship between the following compounds?

$$CH_3 - CH_2 - \underset{CH_3}{\underset{|}{CH}} - CH_2 - CH_3, CH_3 - CH_2 - CH_2 - CH_2 - \underset{CH_3}{\underset{|}{CH_2}}$$

A. Chain isomers

B. Position isomers

C. Functional isomers

D. Identical

Answer: A

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4. What is the relation between 3-Ethylpentane and 3-Methylhexane?

A. Chain isomers

B. Position isomers

C. Functional isomers

D. Relation

Answer: A

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5. $CH_3 - CH_2 - (NH) - (CHO), CH_3 - \underset{\underset{NH_2}{|}}{CH} - CHO$

Which type of isomerism is observed between I and II .

A. Chain isomers

B. Position isomers

C. Functional isomers

D. Metamers

Answer: C

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6. Molecular formula $C_4H_{10}O$ represent

A. Two primary alcohol

B. One secondary alcohol

C. One tertiary alcohol

D. All of these

Answer: D

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Exercise-1 Part-2 Section(H)

1. How many positional isomers are possible for dimethylcyclohexane?

A. 3

B. 4

C. 5

D. 6

Answer: B

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2. How many aromatic isomers are possible for trichlorobenzene $(C_6H_3Cl_3)$?

A. 2

B. 3

C. 4

D. 5

Answer: B

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3. The number of ether isomers represented by formula $C_4H_{10}O$ is (only structral)

A. 4

B. 3

C. 2

D. 1

Answer: B

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4. Total number of 2° amine isomers of $C_4H_{11}N$ would be (only structural)

A. 4

B. 3

C. 5

D. 2

Answer: B

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5. How many structural isomers of all the tertiary alcohols with molecular formular formula $C_6H_{14}O$.

A. 2

B. 3

C. 4

D. 5

Answer: B

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6. The number of structural isomers for C_5H_{10} are:

A. 8

B. 6

C. 9

D. 10

Answer: D

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7. The number of acyclic isomers of C_3H_5Cl are:

A. 1

B. 2

C. 3

D. 4

Answer: C

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8. The number of cyclic ketones of molecular formula C_3H_4O are:

A. 2

B. 1

C. 3

D. 4

Answer: B

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9. The number of cyclic isomers of molecular formula $C_3H_4Cl_2$ are:

A. 1

B. 2

C. 3

D. 4

Answer: B

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10. The number of structural isomers of for C_4H_9Cl are:

A. 1

B. 2

C. 3

D. 4

Answer: D

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Exercise-2 Part-1

1. $IUPAC$ name of the compound

$$CH_3CH_2CH_2CH_2-\underset{CH_3}{\underset{|}{CH}}-\underset{\underset{CH_2CH_3}{|}}{\underset{CHCH_3}{\underset{|}{CH}}}-CH_2-\underset{CH_3}{\underset{|}{\overset{CH_3}{\overset{|}{C}}}}-CH_3$$ is

A. 2, 2, 5-Trimethyl-4-(1-methylpropl) nonane

B. 4, 8, 8-Trimethyl-6-(1-methylpropl) nonane

C. 3, 6-Dimethyl-4-(1-methylene tertiary butyl) nonane

D. 6, 6-Dimethyl-2-propyl-4-(1-methyylpropyl)heptane

Answer: A

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2. In the structure of 4-Isoropyl-2, 4, 5-trimethylheptane, number of 1°, 2° & 3° $H's$ are respectively.

A. 18,5,4

B. 21,4,3

C. 18,4,3

D. 21,5,4

Answer: B

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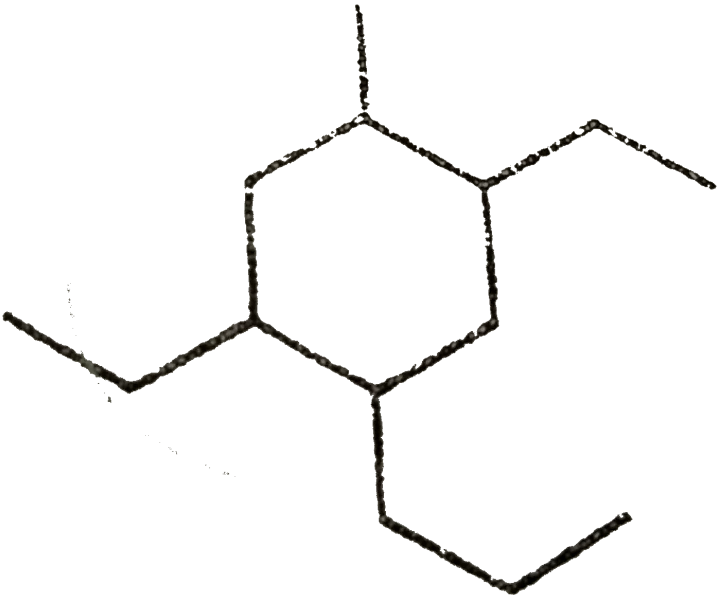
3. The correct $IUPAC$ name of



is:

A. 1, 4-Diethyl-2-methyl-5-propylcyclohexane

B. 1, 4-Diethyl-5-methyl-2-propylcyclohexane

C. 2, 5-Diethyl-1-methyl-4-propylcyclohexane

D. 2, 5-Diethyl-4-methyl-1-propylcyclohexane

Answer: A

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4. IUPAC nomenclature of the given organic compound $(CH_3)_2C(CH_2CH_3)CH_2CH(Cl)CH_3$ will be

A. 5-Chloro 3, 3-dimethyl hexane

B. 4-Chloro-2-ethyl-2-methyl pentane

C. 2-Chloro-4-ethyl-4-methyl pentane

D. 2-Chloro-4, 4-dimenthyl hexane

Answer: D

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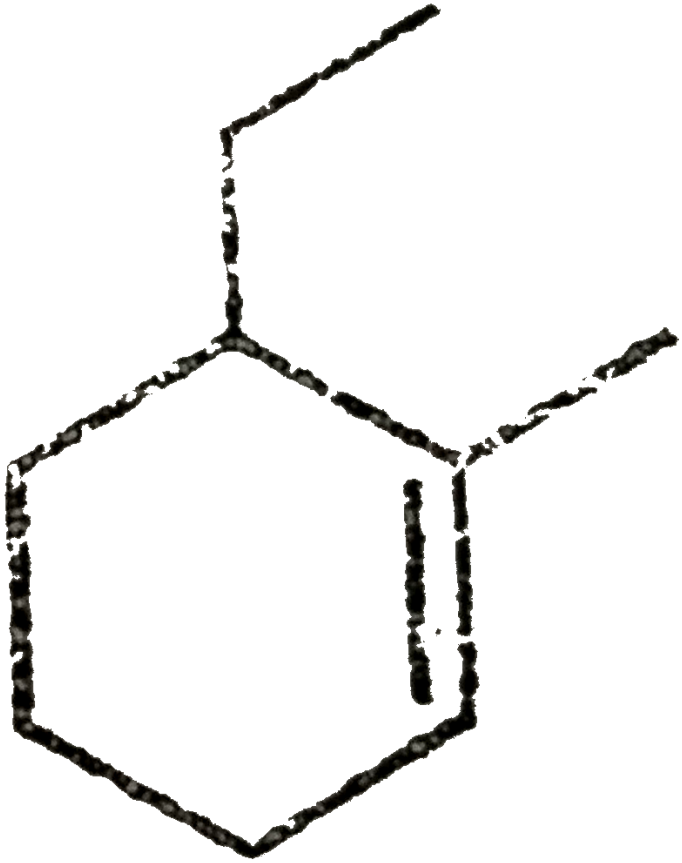
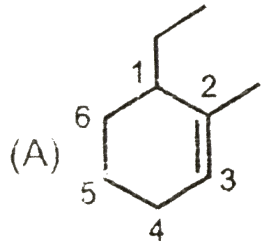
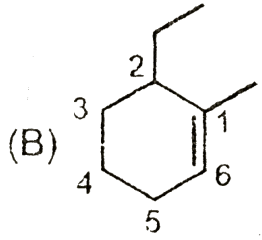
5. The correct $IUPAC$ numbering in the compound

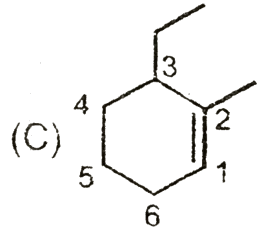


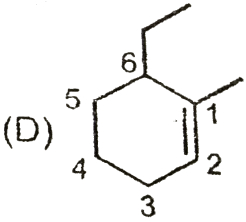
is:

A.



B. 

C. 

D. 

Answer: D

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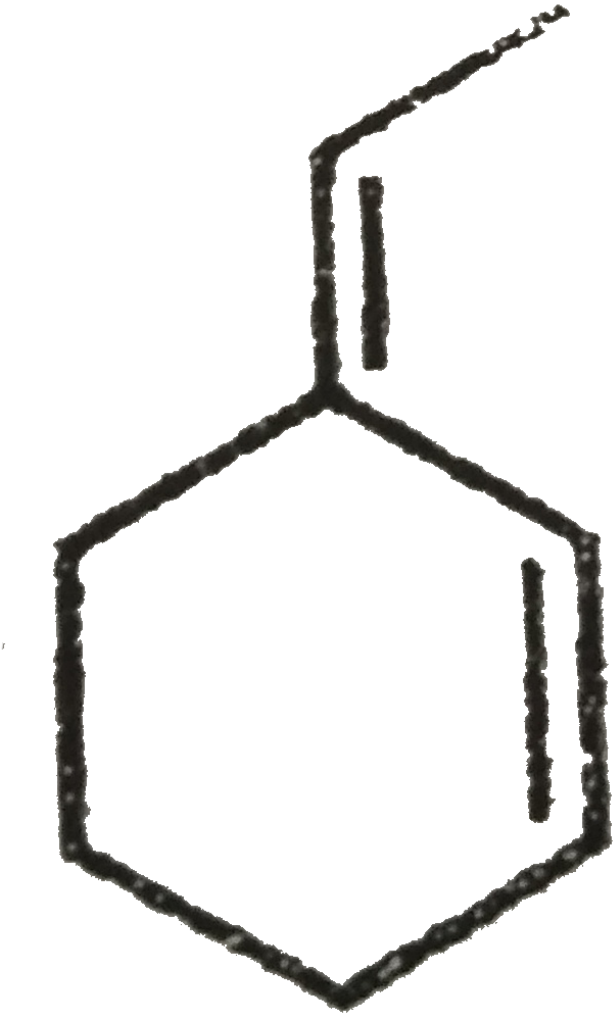
6. The correct $IUPAC$ name of



A. 1-Ethylidenecyclohex-2-ene

B. 3-Ethylidenecyclohex-1-ene

C. 2-Ethylidenecyclohex-1-ene

D. 3-Ethenylcyclohex-1-ene

Answer: B

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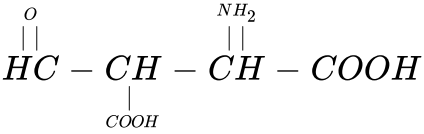
7. Correct $IUPAC$ name of the following compound is



A. 2-Amino-3-Formyl butane-1, 4-dioic acid

B. 2-formyl-3-amino butane-1, 4-dioic acid

C. 3-Amino-2-formyl butane-1, 4-dioic acid

D. 2-Amino-3-carboxy-4-oxo butanoic acid

Answer: A

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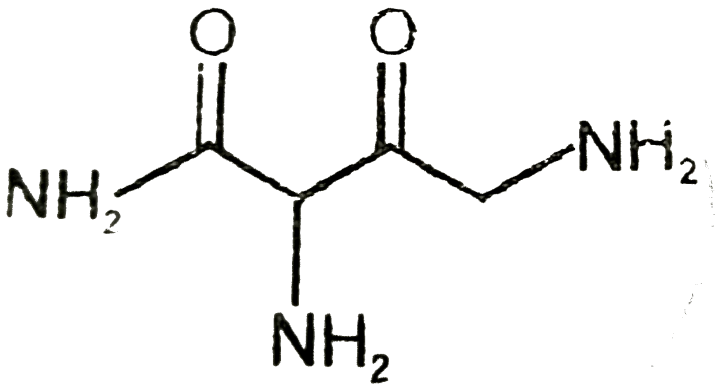
8. The correct $IUPAC$ name of the compound is:



A. 1, 2, 3-Triaminobutane-1, 3-dione

B. 2, 4-Diamino-3-oxobutanamide

C. 1, 3-Dioxobutane-1, 2, 4-triamine

D. 1, 3, 4-Triaminobutane-2, 4-dione

Answer: B

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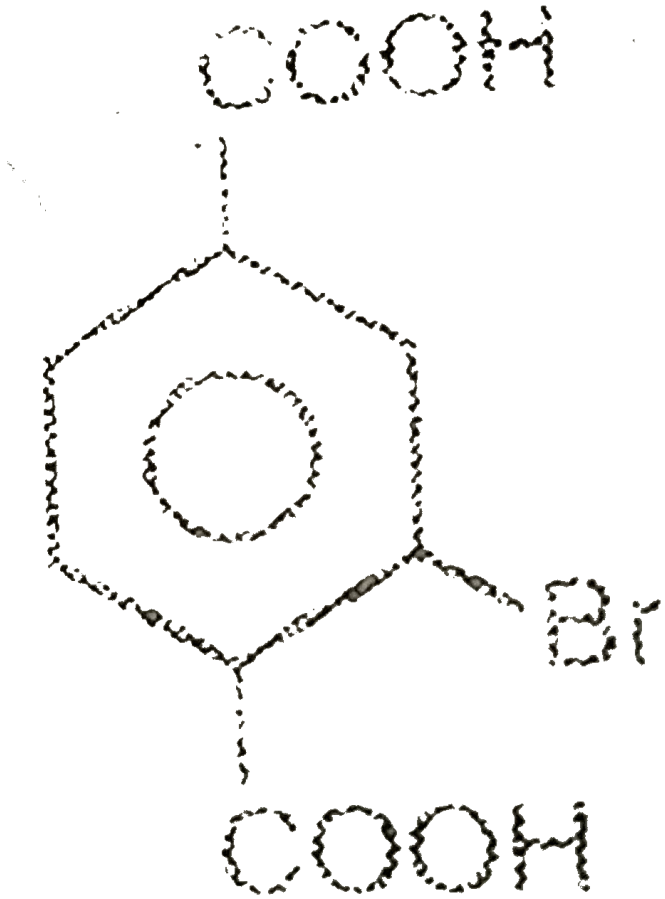
9. $IUPAC$ name of the following molecule is



A. 2-Bromobenzene-1,4-dioic acid

B. 3-Bromobenzene-1, 4-dicarboxylic acid

C. 2-Bromobenzene-1, 4-dicarboxylic acid

D. 3-Bromobenzene-1, 6-dicarboxylic acid

Answer: C

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10. $IUPAC$ name of picric acid is

A. 2, 4, 6-Trinitrobenzene carboxylic acid

B. 2, 4-Dinitrobenzene carboxylic acid

C. 2, 4, 6-Trinitrophenol

D. 2, 4-Dinitrophenol

Answer: C

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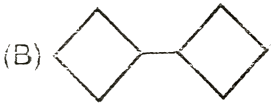
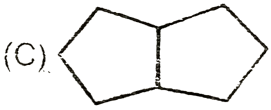
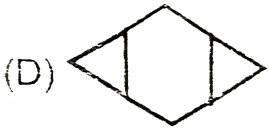
11. Which one of the compound is not isomers of others?

A. 

B. 

C. 

D. 

Answer: D

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12. What is the number of all (structurally isomeric) alkynes with molecular formula C_6H_{10}.

A. 6

B. 7

C. 8

D. 9

Answer: B

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13. Number of structurally isomeric ether with molecular formula $C_5H_{12}O$.

A. 4

B. 5

C. 6

D. 7

Answer: C

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14. How many structural isomers are possible when one of the hydrogen is replaced by a chlorine atom in anthracene?

A. 3

B. 7

C. 4

D. 6

Answer: A

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15. The number of structurally isomerc tribromo derivatives possible for benzene are:

A. 2

B. 3

C. 4

D. 5

Answer: B

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Exercise-2 Part-2

1. A hydrocarbon (R) has six membered ring in which there is no unsaturation. Two alkyl groups are attached to the ring adjacent to each other. One group has 3 carbon atoms with branching at 1^{st} carbon atom of chain and another has 4 carbon atoms. The larger alkyl group has main chain of three carbon atoms of which second carbon is substituted. Number of 2° carbons in R are:

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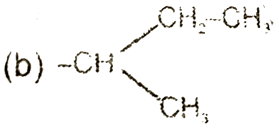
2. Number of correct names in the given substituents are:

(a) Ethylmethyl



1-Methylpropyl

(c) $-\underset{CH_3}{\underset{|}{CH}}-\underset{CH_3}{\underset{|}{CH}}-CH_3$, 2, 3-Dimethylpropyl ,

(d) $-CH_2-\underset{CH_3}{\underset{|}{CH}}-\underset{CH_3}{\underset{|}{CH}}-CH_3$, 2, 3-Dimethylbutyl , (e) $=CH-CH_3$, Ethylidene , (f) $-\underset{CH_3}{\underset{|}{CH}}=CH_2$, 2-Methylethenyl , (g) $-C\equiv CH$,Ethynyl , (h) $-CH_2-CH=CH_2$, 2-Propenyl , (i) $-CH_2-C\equiv CH$, Prop-1-ynyl

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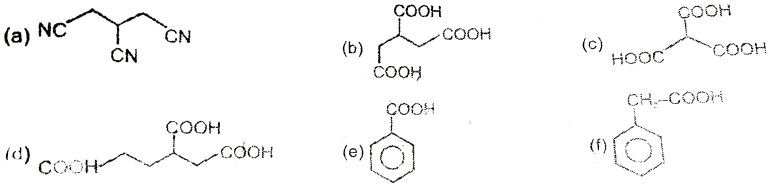
3. The number of compound(s) in which carbon atom of functional group can be counted in main chain is/are:



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4. What is the degree of unsaturation in a compound with molecular formula $C_9H_6N_4$?

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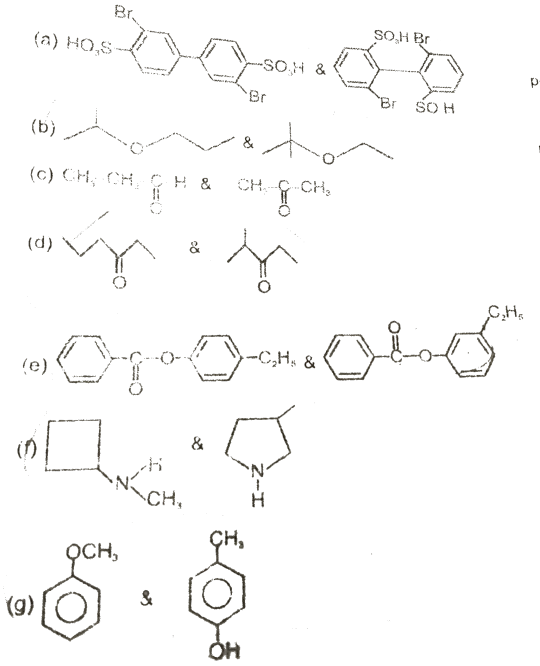
5. The no. of isomeric pair with correct relationship specified are:



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6. How many structurally isomeric dibromo butanes are possible.

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7. The number of acyclic structural isomers of C_5H_{10}.

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8. How many number of all structurally isomeric dienes with molecular formula C_5H_8 are possible:

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9. How many structural alkenes of formula $C_2FClBrI$ are possible:

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10. How many structural isomers containing a benzene ring are possible for C_8H_{10} :

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11. How many tetramethyl benzene are possible:

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12. How many structurally isomeric cyclic isomers of molecular formula C_3H_7N are possible:

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13. The number of structurally isomeric ketones with molecular formula $C_{5H_{12}O}$ are:

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14. The number of structurally isomeric esters with molecular formula $C_{5H_{10}O}$ are.

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Exercise-2 Part-3

1. All the members of a homologus series have same

A. Functional group

B. Empirical formula

C. General formula

D. All of these

Answer: A::C

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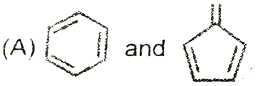
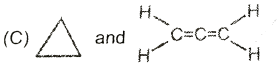
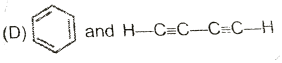
2. The pair of compounds having the same general formula.

A. 

B. 

C. 

D. 

Answer: A::B::D

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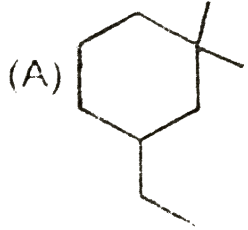
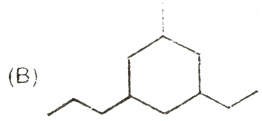
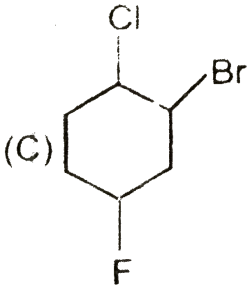
3. Which of the following $IUPAC$ names are correct.

A. 

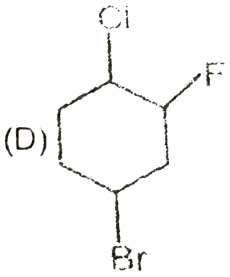
3-Ethyl-1, 1-dimethylcycohexane

B. 

1-Ethyl-3-methyl-5-propylcyclohexane

C. 

2-Bromo-1-chloro-4-fluorocyclohexane

D. 

1-Bromo-4-chloro-3-fluorocyclohexane

Answer: A::B::C

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4. The compound with only primary hydrogen atoms is/are:

A. Hexamethylcyclopropane

B. Neohexane

C. Tetramethylbutane

D. Hexamethylbenzene

Answer: A::C::D

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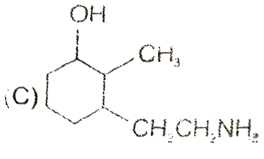
5. Which of the following is/are incorrect $IUPAC$ name/ (s):

A. $CH_3 - \underset{\underset{O}{||}}{C} - \underset{\underset{CH_3}{|}}{CH} - CH_3$, 2-Methylbutan-3-one

$HC \equiv C - CH - CH = CH$

B. $\begin{array}{l} | \\ HC{=}CH_2 \end{array}$, 3-Ethenylpent-1-en-4-yne

C. 

, 3(2-Aminoethyl)-2methylcyclohexan-1-ol

D. $CH_3 - \underset{CH_3}{\underset{|}{CH}} - \underset{O}{\underset{||}{C}} - \underset{CH_3}{\underset{|}{CH}} - OH$, 4-Methyl-3-oxopentan-2-ol

Answer: A::B::D

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6. Which of the following $IUPAC$ names are correct.

A. 

B. 

C. 

D. 

Answer: A::C::D

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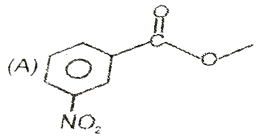
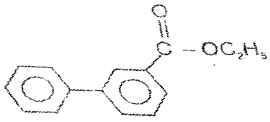
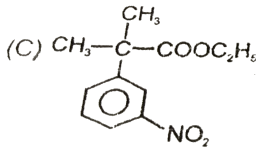
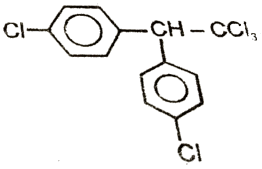
7. Which of the following $IUPAC$ names are incorrect.

A. 

B. 

C. 

D. 

Answer: C::D

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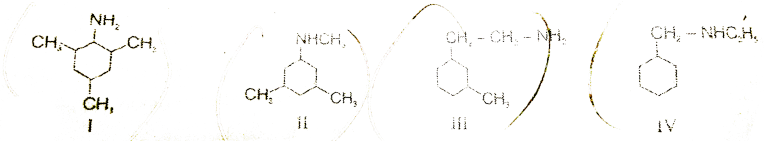
8. Which of the following is the correct relationship?



A. I & II are funtional isomers.

B. II & IV are metamers.

C. I & IV are position isomers.

D. I & III are chain isomers.

Answer: A::B::D

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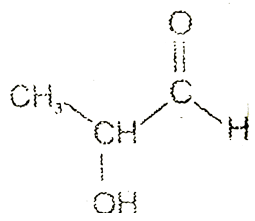
9. Which of the following are functional isomers of methyl ethanoate?

A. $CH_3 - CH_2 - COOH$

B. 

C. $CH_3 - O - CH_2 - \overset{\overset{O}{||}}{C} - H$

D. $\underset{\underset{OH}{|}}{CH_2} - \overset{\overset{O}{||}}{C} - CH_3$

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

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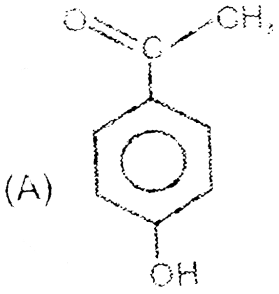
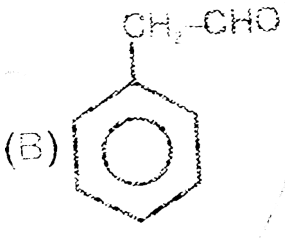
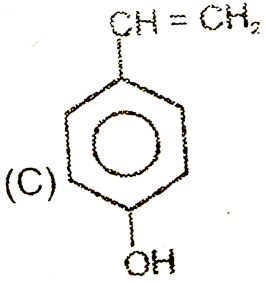
10. Which of the following can be the isomer(s) of C_8H_8O:

A. 

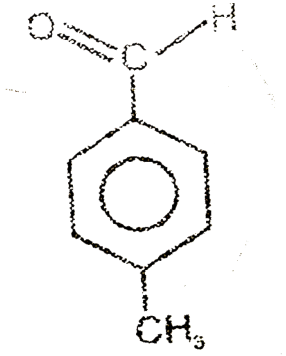
B.



C.



D.



Answer: B::C::D

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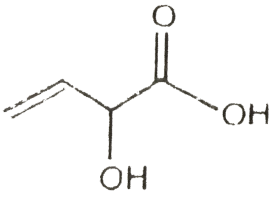
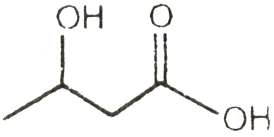
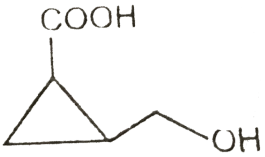
Exercise-2 Part-4

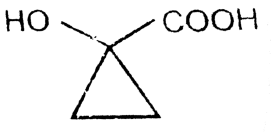
1. There are three isomeric compounds P, Q, R with molecular formula $C_4H_6O_3$.Compound P is a saturated hydroxy carboxylic acid.Compound Q is a symmetrical anhydride while R is an aldehydic ester.

Which of the following is P?

A. 

B. 

C. 

D. 

Answer: D

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2. There are three isomeric compounds P, Q, R with molecular formula $C_4H_6O_3$.Compound P is a saturated hydroxy carboxylic acid.Compound Q is a symmetrical anhydride while R is an aldehydic ester.

Which of the following is the metamer of Q?

A. $CH_3 - \overset{O}{\overset{||}{C}} - O - \overset{O}{\overset{||}{C}} - CH_3$

B. $H - \overset{O}{\overset{||}{C}} - O - \overset{O}{\overset{||}{C}} - CH_2 - CH_3$

C. $H - \overset{O}{\overset{||}{C}} - O - CH_2 - \overset{O}{\overset{||}{C}} - CH_3$

D. $CH_3 - O - \overset{O}{\overset{||}{C}} - \overset{O}{\overset{||}{C}} - OCH_3$

Answer: B

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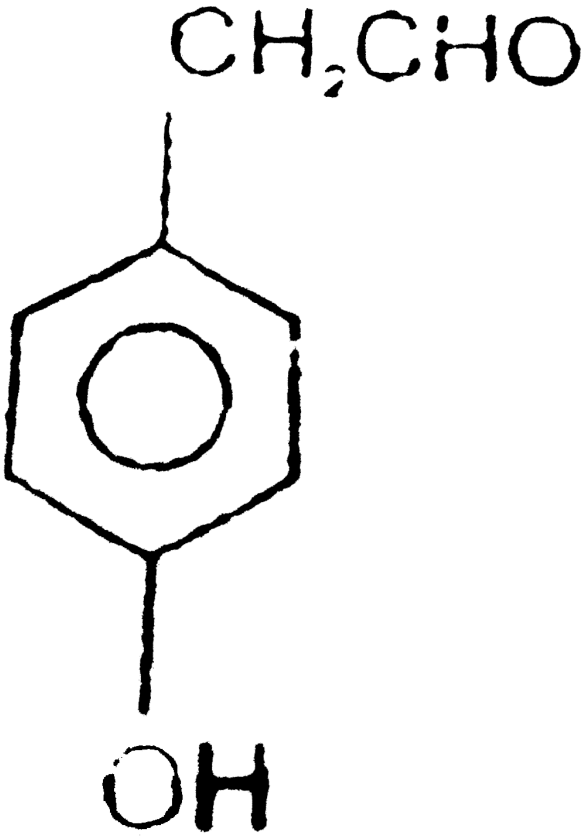
Exercise-3 Part-1

1. Write $IUPAC$ name of the following



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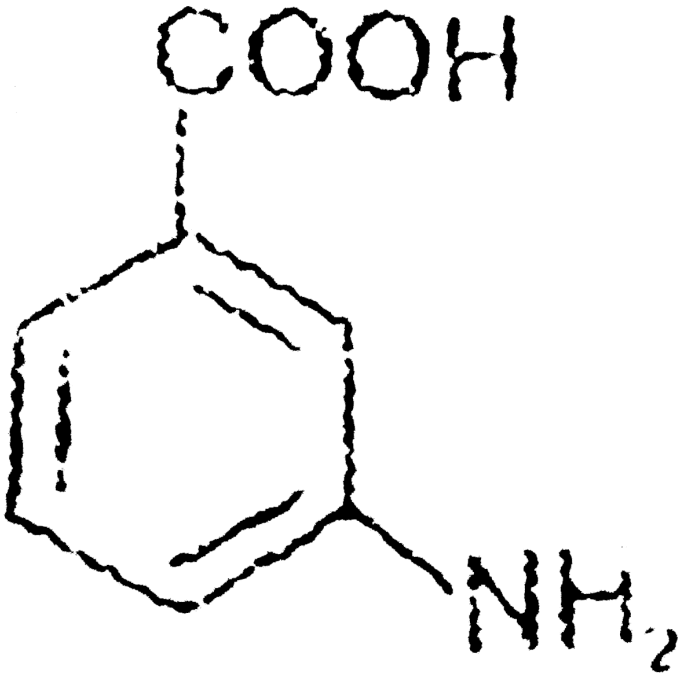
2. Write $IUPAC$ name of the following



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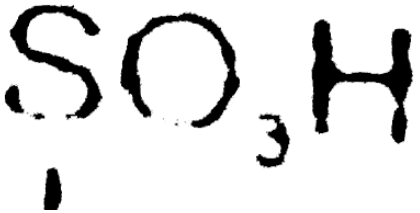
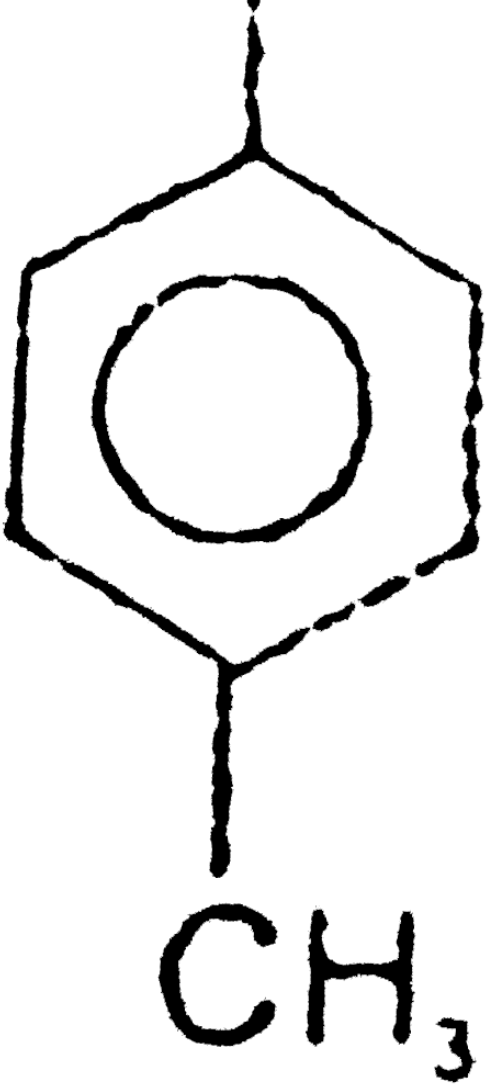
3. Write $IUPAC$ name of the following





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4. The $IUPAC$ name of C_(6)H_(5)COCl` is:

A. Benzoyl chloride

B. Benzene chloro ketone

C. Benzene carbonyl choride

D. Chloro phenyl ketone

Answer: C

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5. The number of structural isomers for C_6H_{14} is :

A. 3

B. 4

C. 5

D. 6

Answer: C

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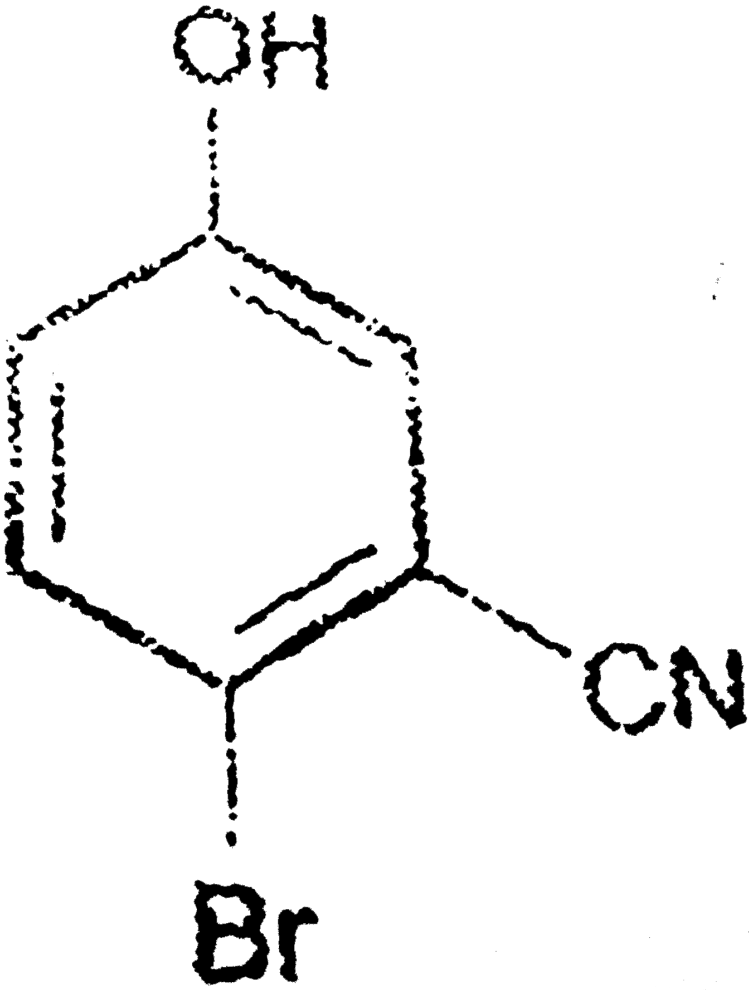
6. The $IUPAC$ name of the following compound is:



A. 4-Bromo-3-cyanophenol

B. 2-Bromo-5-hydroxybenzonitrile

C. 2-Cyano-4-hydroxybromobenzene

D. 6-Bromo-3-hydroxybenzonitrile

Answer: B

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7. The total number of cyclic isomers possible for a hydrocarbon with the molecular formula C_4H_6 is .....

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8. In allene (C_3H_4) the type(s) of hybridisation of the carbon atoms is (are):

A. sp and sp^3

B. sp and sp^2

C. only sp^3

D. sp^2 and sp^3

Answer: B

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9. The carboxyl functional group$(-COOH)$ is present in:

A. picric acid

B. barbituric acid

C. ascorbic acid

D. aspirin

Answer: D

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Exercise-3 Part-2

1. Which of the following compound has wrong IUPAC name?

A. $CH_3 - CH_2 - CH_2 - COO - CH_2CH_3 \rightarrow$ Ethyl butanoate

B. $CH_3 - \underset{\underset{CH_3}{|}}{CH} - CH_2 - CHO \rightarrow$ 3-Methylbutanal

C. $CH_3 - \underset{\underset{OH}{|}}{CH} - \underset{\underset{CH_3}{|}}{CH} - CH_3 \rightarrow$ 2-Methyl-3-butanol

D. $CH_3 - \underset{\underset{CH_3}{|}}{CH} - \overset{\overset{O}{||}}{C} - CH_2 - CH_2 \rightarrow$ 2-Methyl-3-pentanone

Answer: C

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2. The general formula $C_nH_{2n}O_2$ could be for open chain

A. diketones

B. carboxylic acids

C. diots

D. dialdehydes.

Answer: B

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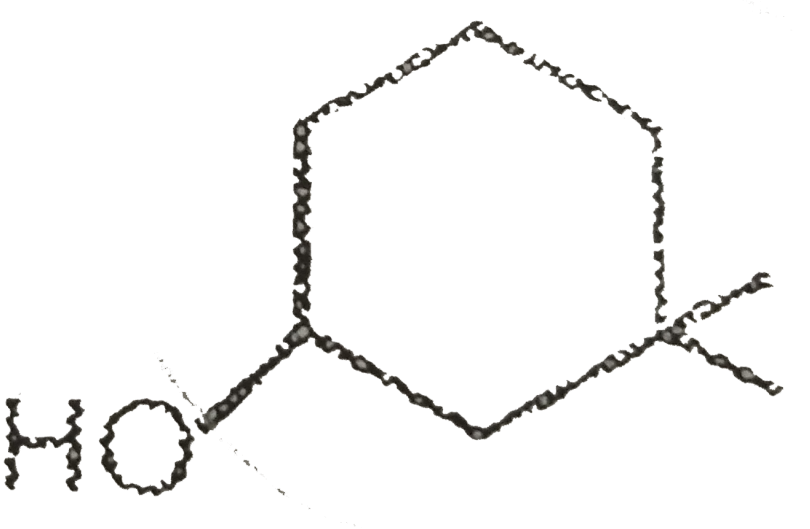
3. The $IUPAC$ name of the compound



,

A. 3, 3-dimethyl-1-hydroxy cyclohexane

B. 1, 1-dimethyl-3-hydroxy cyclohexane

C. 3, 3-dimethyl-1-cyclohexanol

D. 1, 1-dimethyl-3-cyclohexanol

Answer: C

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4. The $IUPAC$ name of the compound shown below is  ,

A. 2-Bromo-6-chlorocyclohex-1-ene

B. 6-Bromo-2-chlorocyclohexene

C. 3-Bromo-1-chlorocyclohex-1-ene

D. 1-Bromo-3-chlorocyclohexene

Answer: C

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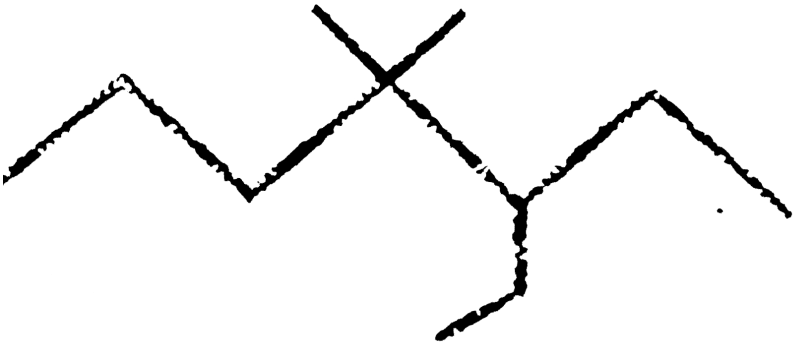
5. The $IUPAC$ name of is:



A. 5, 5-Diethyl-4, 4-dimethylpentane

B. 3-Ethyl-4, 4-dimethylheptane

C. 1, 1-Diethyl-2, 2-dimethylpentane

D. 4, 4-Dimethyl-5, 5-diethylpentane

Answer: B

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6. The correct decreasing order of priority for the functional group of organic compounds in the $IUPAC$ system of nomenclature is

A. $-SO_3H,\ -COOH,\ -CONH_2,\ -CHO$

B. $-CHO,\ -COOH,\ -SO_3H,\ -CONH_2,$

C. $-CONH_2,\ -CHO,\ -SO_3H,\ -COOH$

D. $-COOH,\ -SO_3H,\ -CONH_2,\ -CHO$

Answer: D

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7. The $IUPAC$ name of neopentane is

A. 2, 2-Dimethylpropane

B. 2-methylpropane

C. 2, 2-dimethylbutane

D. 2-methylbutane

Answer: A

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8. Aspiring is know as:

A. Acetyl salicylic acid

B. Phenyl salicylate

C. Acetyl salicylate

D. Methyl salicylic acid

Answer: A

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1. How many π and σ bonds are in the given compound?

$HC \equiv C - CH = CH_2$

A. 3π and 6σ bonds

B. 3π and 7σ bonds

C. 2π and 7σ bonds

D. 4π and 8σ bonds

Answer: B

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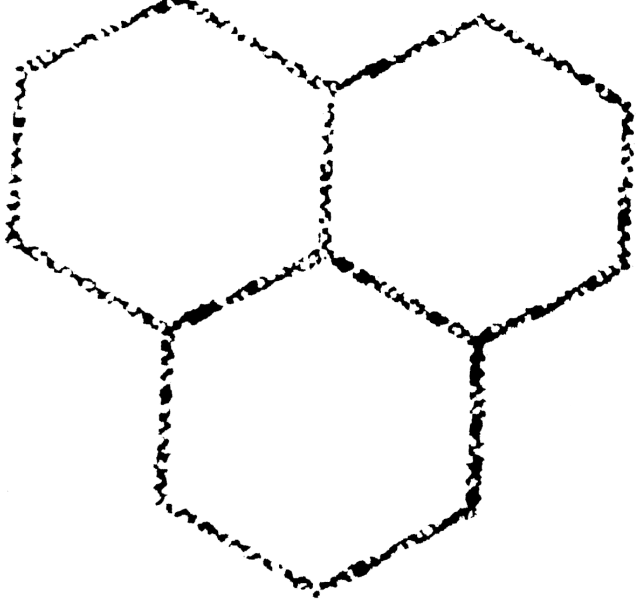
2. How many 2° and 3° carbon atoms are present in the given compound respectively?



A. 9 &4

B. 10 & 3

C. 9 & 3

D. 6 & 1

Answer: A

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3. In the organic compound $\overset{1}{C}H_2 = \overset{2}{C}H - \overset{3}{C}H_2 - \overset{4}{C}H_2 - \overset{5}{C} \equiv \overset{6}{C}H$

the pair of hybridised orbitals in the formation of : $C_2 - C_3$

A. $sp - sp^2$

B. $sp - sp^3$

C. $sp^2 - sp^3$

D. $sp^3 - sp^3$

Answer: C

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4. Which of the following is unsaturated hydrocarbon?

A.

B. 

C. 

D. 

Answer: D

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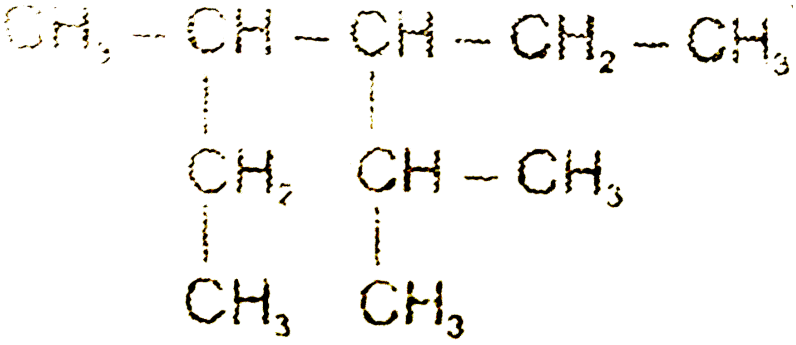
5. The correct $IUPAC$ name os the following compound is



A. 4-Ethyl-3, 5-dimethylhexane

B. 2, 4-Dimethyl-3-ethylhexane

C. 3-Ethyl-2, 4-dimethylhexane

D. 3-Isopropyl-4-methylhexane

Answer: D

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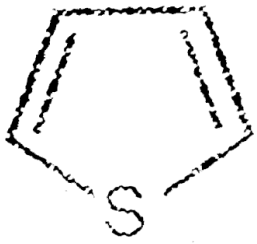
6. Which is the structure of pyrrole?

A. 

B.



C.

D.

Answer: A

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7. Which $IUPAC$ name is incorrect among the following compounds?

A. $CH_3 - CH = CH - CH_2 - CI$, 1-Chlorobut-2-eye

B. $HC \equiv C = CH_2 - CH_2 - Br$, 1-Bromobut-3-yne

C. $CH_3 - CH = CH - CH = CH_2$, Penta-1, 3-diene

D. $CH_3 - \overset{Br}{\underset{|}{C}}H - CH_2 - \overset{Cl}{\underset{Cl}{\overset{|}{\underset{|}{C}}}} - CH_3$, 4-Bromo-2, 2-dichloropentane

Answer: B

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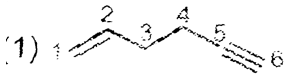
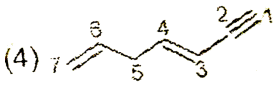
8. Which of the following represent incorrect numbering.

A.



B.

C.

D. (4) 

Answer: B

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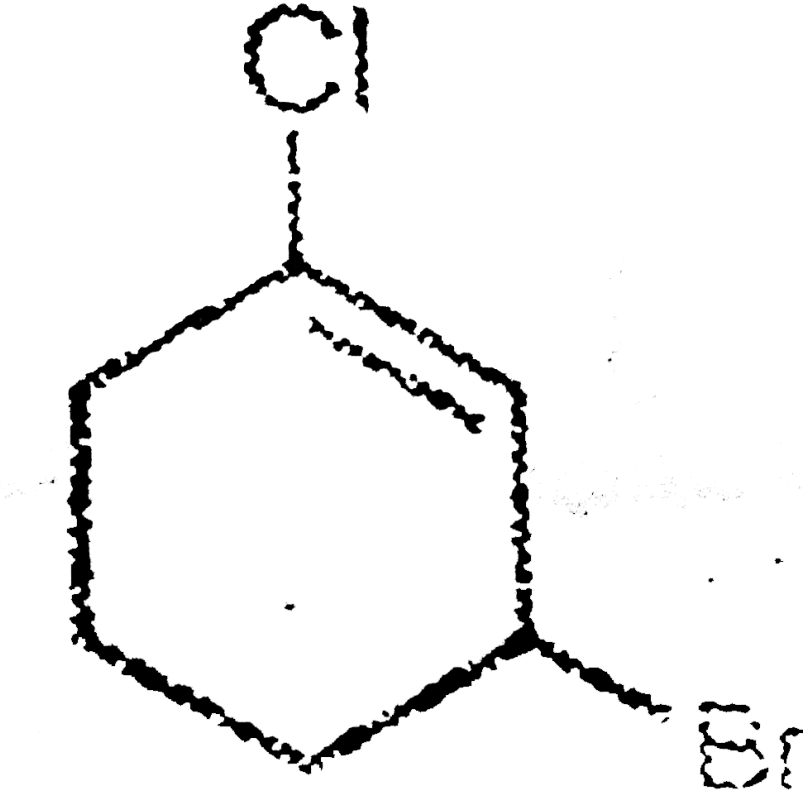
9. The $IUPAC$ name of the compound shown below is



A. 2-Bromo-6-chlorocyclohex-1-ene

B. 6-Bromo-2-chlorocyclohexene

C. 3-Bromo-1-chlorocyclohex-1-ene

D. 1-Bromo-3-chlorocyclohexene

Answer: C

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10. The $IUPAC$ name of compound $CH_3 - C(CH_3)_2 - CH_2 - CH = CH_2$ is

A. 2, 2-Dimethylpent-4-ene

B. 2, 2-Dimethyl-2-pentene

C. 1, 1, 1-Trimethylbut-3-ene

D. 4, 4-Dimethylpent-1-ene

Answer: D

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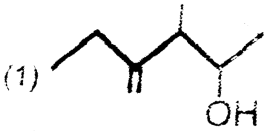
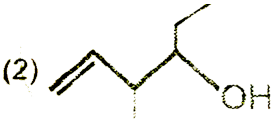
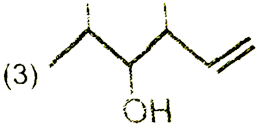
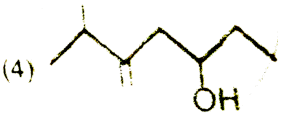
11. What is the structure of 4-Methylhex-5-en-3-ol.

A. 

B. 

C. 

D. 

Answer: B

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12. A compound having straight chain of five carbon atoms has one ketone group and two methyl group on different-defferent carbon atoms. The $IUPAC$ name of the compound is:

A. 2, 4-Dimethyl-3-oxopentane

B. 2, 4-Dimethylpentan-3-one

C. 3, 4-Dimethyl-2-oxopentane

D. 3, 3-Dimethylpentan-2-one

Answer: B

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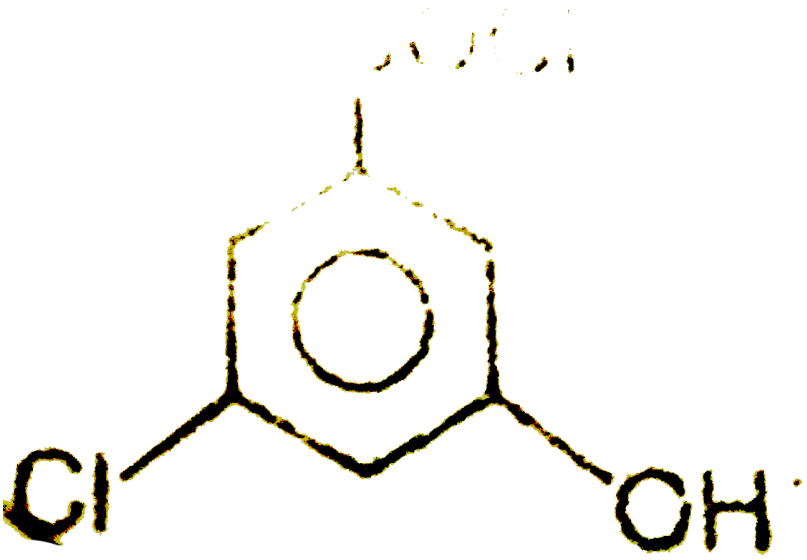
13. What is the $IUPAC$ name of



A. 5-Chloro-3-hydroxybenzenecarbonyl chloride

B. 3-Hydroxy-5-chlorobenzenecarbonyl chloride

C. 3-Chloro-5-hydroxybenzenecarbonyl chloride

D. 1-Chlorocarbonyl-3-chlorobenzene-1-ol

Answer: C

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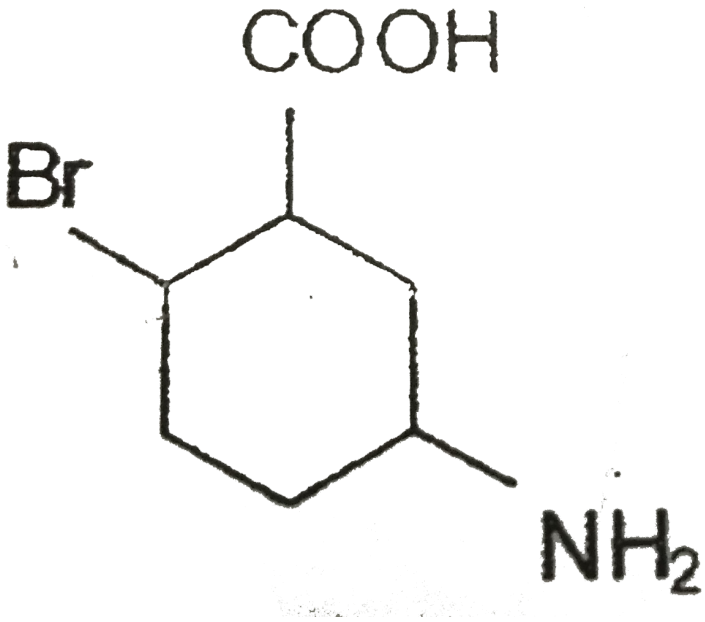
14. What is the $IUPAC$ name of compound is:



A. 3-Amino-6-bromocyclohexane-1-carboxylic acid

B. 2-Bromo-5-aminocychexane-1-carboxylic acid

C. 5-Amino-2-bromocyclohexane-1-carboxylic acid

D. 4-Bromo-5-carboxycyclohexanamine

Answer: C

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15. The $IUPAC$ name of $CH_2 - CH_2 - \underset{\underset{CH_3}{|}}{N} - CH_2 - CH_3$ is:

A. N-Methyl-N-ethyl ethanamine

B. Diethyl methanamine

C. N-Ethyl-N-methyl ethanamine

D. Methyl diethyl ethanamine

Answer: C

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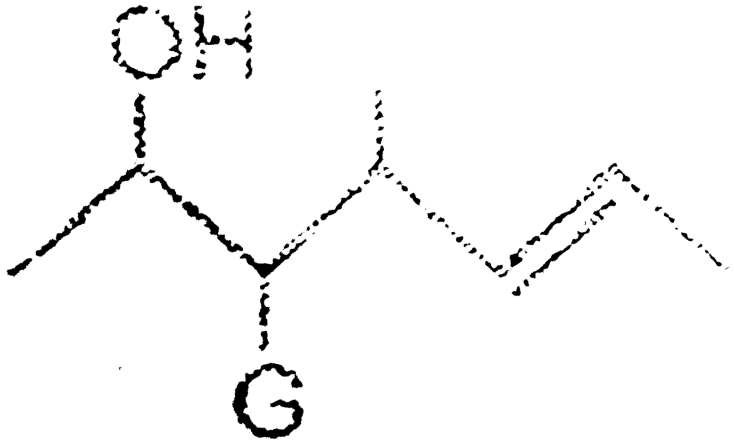
16. In the given formula G is an unknown group.



What will be the group G,which can change the word root (parent carbon chain length) of above structure?

A. $-CH=CH_2$

B. $-Cl$

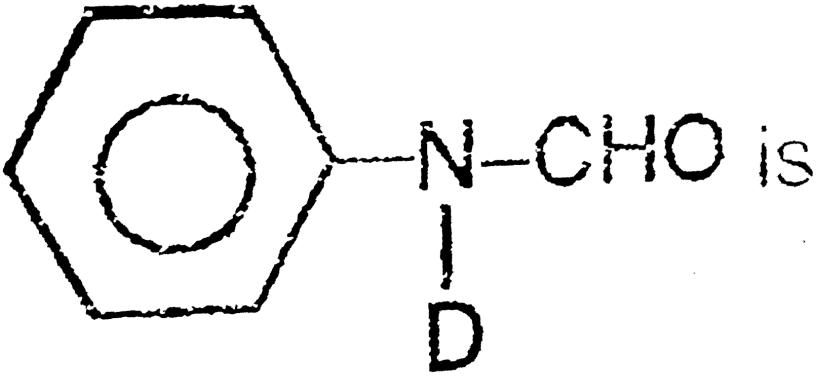
C. $-CH_2-CH_2-CH_3$

D. $-COOH$

Answer: D

Watch Video Solution

17. $IUPAC$ name of



is

A. N-Deutero-N-formylbenzenamine

B. N-Phenylamino-N-deuteromethanal

C. N-Deutero-N-phenylmethanamide

D. N-Deuterobenzene carboxamide

Answer: C

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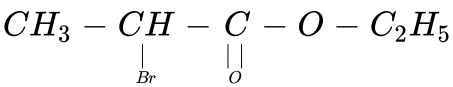
18. Correct $IUPAC$ name of given ester is:



A. Ethyl 2-bromopropanoate

B. 2-Bromoethylpropanoate

C. Ethyl-1-bromoethanoate

D. 2-Bromo ethoxyethanecarboxylate

Answer: A

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19. Relation between Ethyl benzenecarboxylate and phenyl propanoate is:

A. Metamers

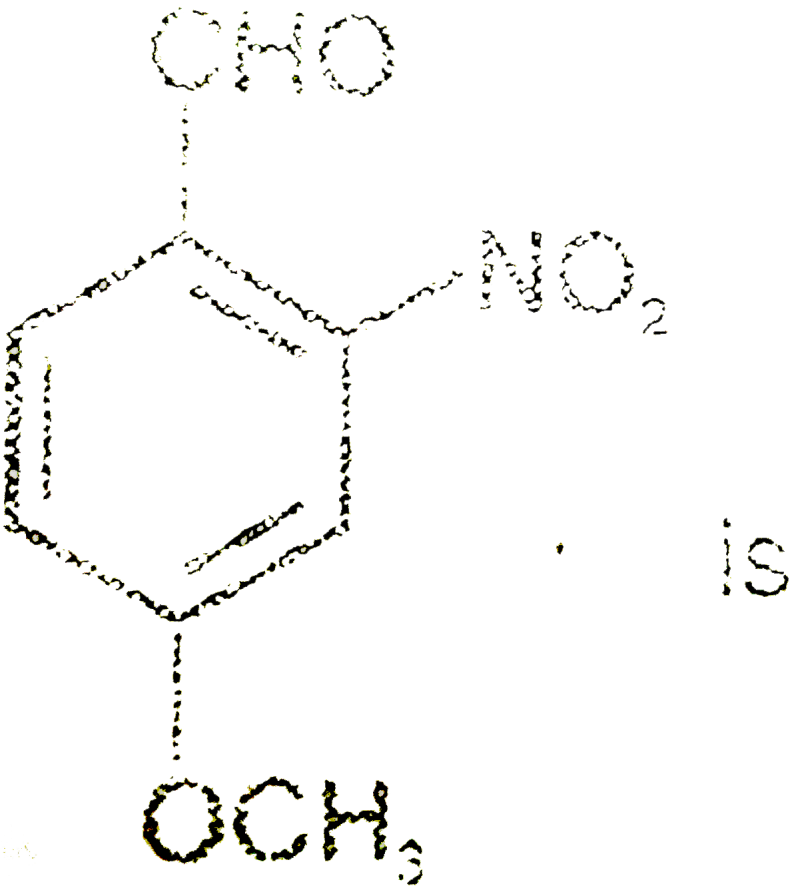
B. Functional isomers

C. Chain isomers

D. Homologues

Answer: A

20. The correct $IUPAC$ name of the compound



, is:

A. 4-Methoxy-2-nitrobenzaldehyde

B. 4-Formyl-3-nitro anisole

C. 4-Methoxy-6-nitrobenzaldehyde

D. 2-Formyl-5-methoxy nitrobenzene

Answer: A

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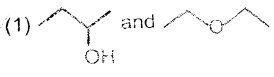
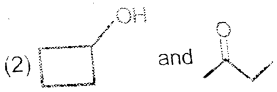
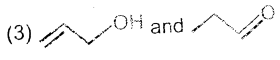
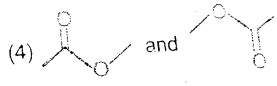
21. Which of the following pair of compounds is not functional isomers?

A. 

B. 

C. 

D. 

Answer: D

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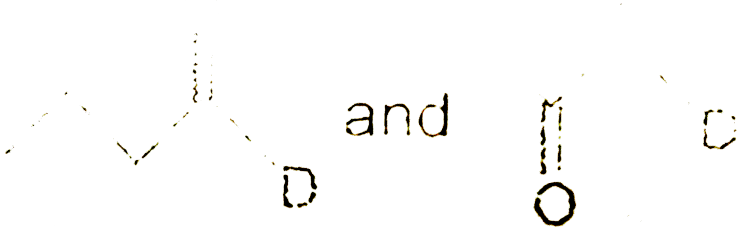
22.  are related as:

A. Functional Isomers

B. Position isomers

C. Chain isomers

D. Metamers

Answer: A

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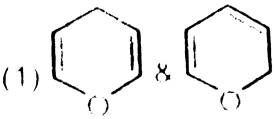
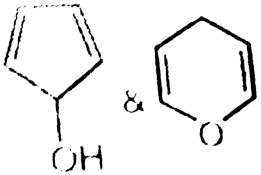
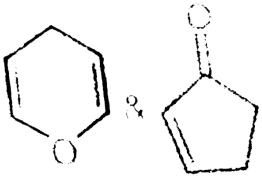
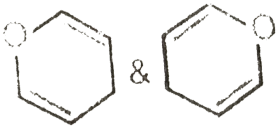
23. Which of the following pairs of structures do not represent isomers?

A. 

B. 

C. 

D. 

Answer: D

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24. Total number of structural isomers possible from molecular formula C_8H_{18} that contain 7 carbons in the parent chain are:

A. 3

B. 4

C. 5

D. 6

Answer: A

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25. Total number of position isomers of trimethyl cyclohexane are:

A. 5

B. 6

C. 7

D. 8

Answer: B

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26. How many 1° amines are possible with molecular formula $C_4H_{11}N$ (only structural isomers)

A. 3

B. 4

C. 5

D. 6

Answer: B

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27. Hybridisation of carbon atoms present in the smallest ester are:

A. All sp^3

B. All sp^2

C. sp^2 and sp^3

D. sp^2 and sp

Answer: C

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28. The number of metamers of the compound with molecular formula $C_5H_{12}O$ is/are:

A. 1

B. 3

C. 8

D. 6

Answer: D

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29. How many tetriary alcohols of formula $C_5H_{12}O$ are possible ?

A. 1

B. 2

C. 3

D. 4

Answer: A

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Advanced Level Problems Part-2 : Practice test-2

1. How many position isomers are possible for chlorophenol?

A. 2

B. 3

C. 4

D. 5

Answer: B

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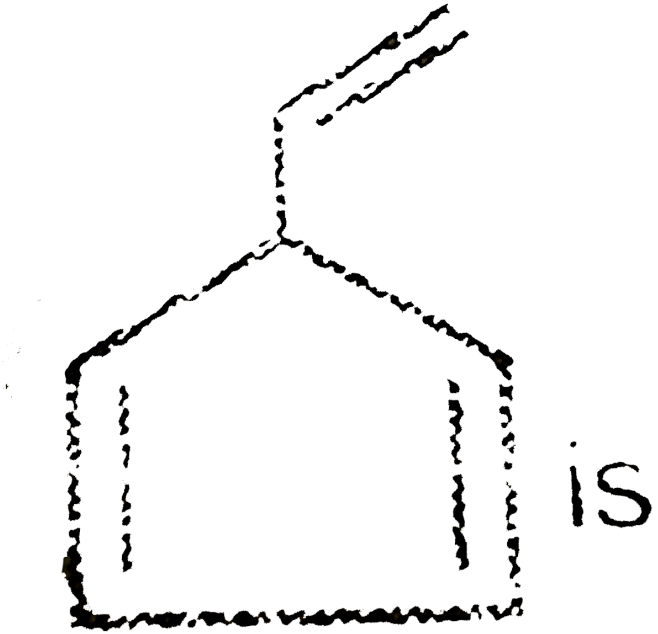
2. $IUPAC$ name of



is

is

A. 5-ethenylcyclopenta-1, 3-diene

B. 3-ethenylcyclopenta-1, 4-diene

C. 1-ethenylcyclopenta-2, 4-diene

D. 2-ethenylcyclopenta-1, 3-diene

Answer: A

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3. How many carboxylic acid structure isomers are possible with $C_5H_{10}O_2$?

A. 3

B. 4

C. 5

D. 8

Answer: B

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4. Which of the following is correct IUPAC name ?

A. 2-Bromo cyclohex-5-ene carbaldehyde

B. Ethyl-2-vinyl pentanoate

C. 5-Bromo-3-chlorohept-3-ene

D. 2-Ethenylhexa-1, 5-diene

Answer: C

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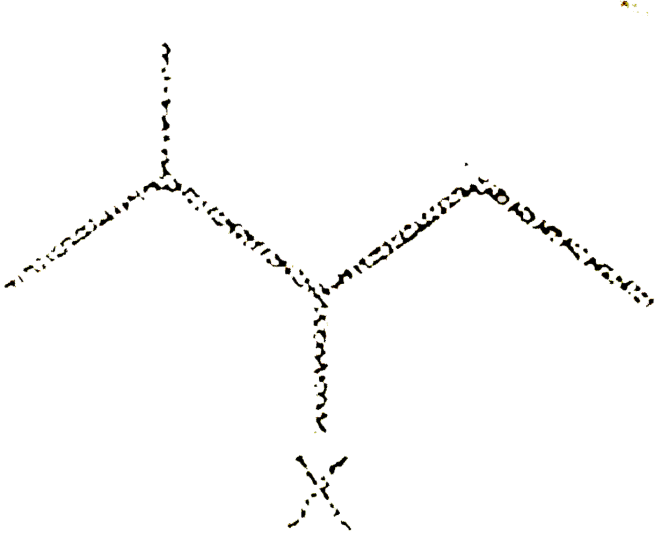
5. When X group is replaced by $-C=N$, then the $IUPAC$ name of the compound below is:



A. 2-Methylpentane-3-nitrile

B. 3-Cyano-2-methylpentane

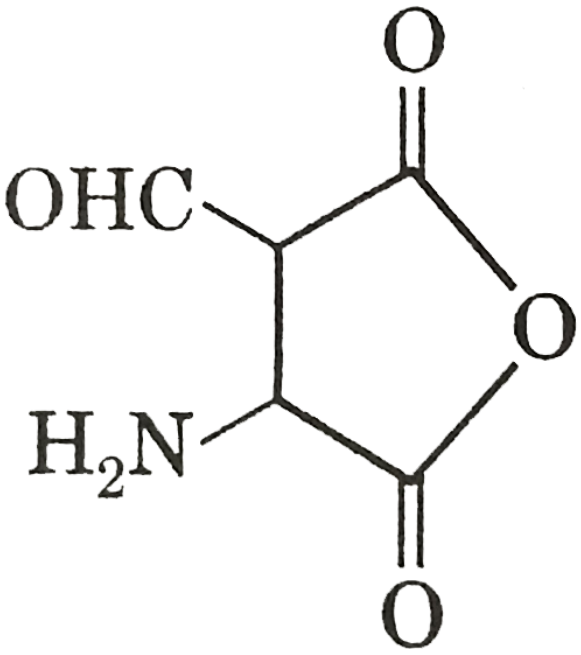
C. 2-Ethyl-3-methylbutanenitrile

D. 2-Methylpentane-3-carbonitrile

Answer: C

Watch Video Solution

6. Correct IUPAC name of following compound is:



A. 2-Amino-3-formyl butane-1, 4-dioic anhydride

B. 3-Amino-2-formyl butane-1, 4-dioic anhydride

C. 3-Amino-2-oxobutane-1, 4-dioic anhydride

D. 2-Formyl-3-amino butane-1, 4-dioic anhydride

Answer: A

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7. Me-O-C- Me end Et -O-CH=O are :

A. Functional Isomers

B. Metamers

C. Positional isomers

D. Chain isomers

Answer: B

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8. Number of structurally isomeric carbonyl compounds possible with molecular formula $C_5H_{10}O$ are:

A. 5

B. 6

C. 7

D. 8

Answer: C

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9. Which of the following statements are incorrect for aniline.

A. Compound is heterocyclic hydrocarbon

B. Number of σ bonds are 8

C. Degree of unsaturation of the compound is 3

D. It contains functional group amine

Answer: A::B::C

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10. Select correct $IUPAC$ name

A. Methane-1, 1, 1, 1-tetracarboxylic acid

B. 5-Carbonyl-heptane-1, 7-dioic acid

C. 2-Chloro ethanoyl chloride

D. 1-Bromo-3-fluoro-4-methyl cyclohexane

Answer: A::C

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11. Which of the following is/are incorrect IUPAC name.

A. 4-Chloro-3-methyl cyclopentanol

B. 1-Amino-3-bromohexan-1-one

C. 4-chloro-3-methylcyclohexane carboxylic acid

D. 3-Bromo-1$-methylhexan-1$`-ol

Answer: A::B::D

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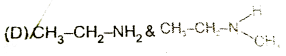
12. Which of the following represent correct pair of homologous ?

A. 

B. $Me-OH$ & $MeCH_2-CH_2OH$

C. $H-\overset{O}{\overset{||}{C}}-O-CH_2$ & $CH_3-\overset{O}{\overset{||}{C}}-O-CH_3$

D. 

Answer: B::C

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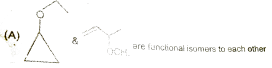
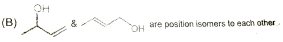
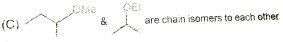
13. Which of the following is/are correct statement (s):

A. 

B. 

C. 

D. 

Answer: A::B::D

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14. Which of the following is/are correct statement (s):

A. The number of structural isomers for molecular formula C_3H_8 are 2

B. The number of structural isomers for molecular formula C_5H_{12} are 3

C. The number of structural isomers for molecular formula C_6H_{14} are 5

D. The number of benzene ring containing structral isomers for molecular formula C_6H_4BrCl are 4

Answer: B::C

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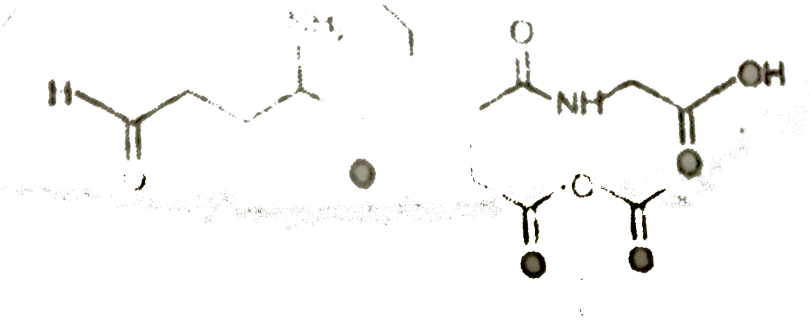
15. Number of functional group present in the following compounds are:



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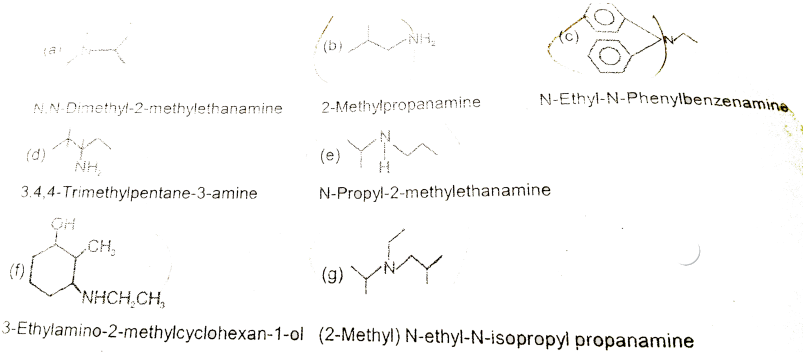
16. The no. of amine(s) with correct $IUPAC$ name is/are



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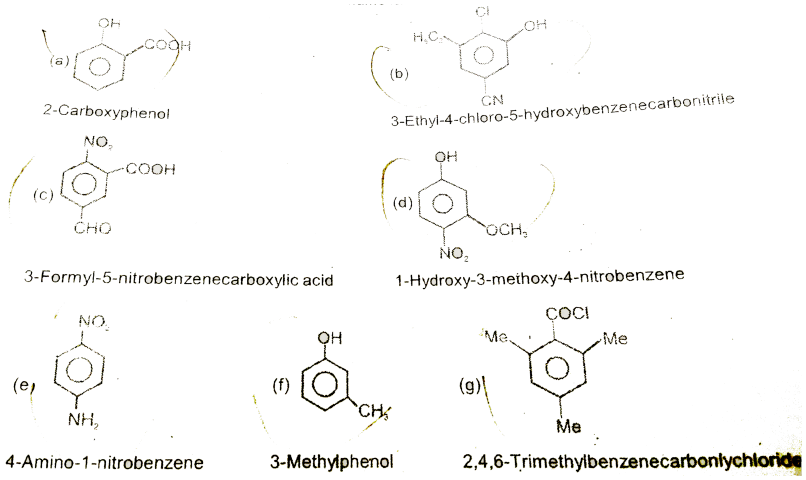
17. The no. of compound with correct $IUPAC$ name is/are:



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18. How many alkynes isomers are dormed with molecular formula C_4H_6 ?

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19. Then number of structurally isomeric compound(s) possible with molecular formula C_8H_{18} containing 5 carbons in main chain having methyl group(s) as side chain are

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20. The number of possible alkynes (strucutral only) for the compound having molecular formula $C_3FCIBrL$ is:

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21. Compounds having same molecular formula but different connectivity of atoms or groups are called structure isomers. Structrue isomers are futher classify according to their dissimilarities.

Which is not the isomer of butanoic acid?

A. 3-Hydroxybutanal

B. Ethyl ethanoate

C. 2-Methylpropanoic acid

D. Butane-2, 3-diol

Answer: D

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22. Compounds having same molecular formula but different connectivity of atoms or groups are called structure isomers. Structrue isomers are futher classify according to their dissimilarities.

In the following skelton Z can be, if the molecular formula is $C_5H_{10}O_2$:

$$CH_3 - CH_2 - \underset{\underset{Z}{|}}{CH} - CH_3$$

(i)A carboxylic acid , (ii)An ester

(iii)Hydroxyaldehyde , (iv)Alkanediol

A. i & ii

B. iii & iv

C. i & iv

D. ii ^ iii

Answer: A

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Advanced Level Problems Part-3

1. How many structural isomers can be obtained by the replacment of one hydrogen atom of propene with chlorine?

A. 4

B. 3

C. 2

D. 5

Answer: B

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2. The $IUPAC$ name of $CH_2 = CHCN$ is:

A. Cyanoethene

B. Vinyl cyanide

C. Ethenenitrile

D. 2-Propenitrile

Answer: D

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3. The number of isomers of C_6H_{14} is

A. 6

B. 5

C. 4

D. 7

Answer: B

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4. The compound which pepresents an unsaturated hydrocarbon is:

A. $CH_3 - C = N$

B. $CH_3 - CH = CH_2$

C. $CH_3 - CH = O$

D. All of these

Answer: B

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5. The number of possible primary alcohols with the molecular $C_4H_{10}O$ is:

A. 1

B. 2

C. 3

D. 4

Answer: B

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6. The $IUPAC$ name of $HOCH_2CH = C(CH_3)_2$ is:

A. 2-Methyl-2-buten 4-ol

B. 3-Methyl-2-buten 1-ol

C. 2-Methyl-2-butanol

D. 3-Methyl-2-butenol

Answer: B

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7. The compound 2-Chloro-3-methyl-1-butanol has the following formula

A. $CH_3CH(CH_3)CHCICH_2OH$

B. $CH_3CHOHCH(CH_3)CH_2CI$

C. $CH_2CIC(CH_3)_2CH_2OH$

D. $CH_3CHCICH(CH_3)CH_2OH$

Answer: A

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8. How many different alcohol (not including optical isomers) are possible with the molecular formula : $C_4H_{10}O$?

A. 3

B. 4

C. 5

D. 6

Answer: B

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9. The $C - C - H$ bond angle in ethylene is:

A. 180°

B. $109^\circ 28^\circ$

C. 120°

D. 90°

Answer: C

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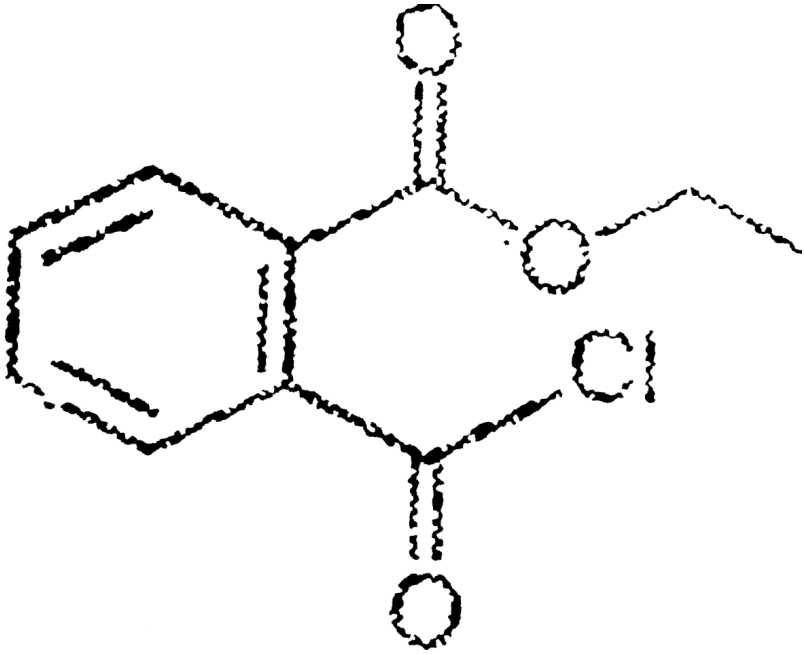
10. The $IUPAC$ name of



is:

A. 2-Chlorocarbonylethyl benzoate

B. 2-Carboxyethylbenzoylchloride

C. Ethyl-2-(chlorocarbonyl) benzoate

D. Ethyl-1-(chlorocarbonyl) benzoate

Answer: C

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11. How many σ bonds and π bonds are present in $CH_2 = C = CH_2$?

A. 6σ and 1π

B. 8σ and 0π

C. 4σ and 4π

D. 6σ and 2π

Answer: D

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12. The number of ether metamers represented by the formula $C_4H_{10}O$ is

A. 1

B. 2

C. 3

D. 4

Answer: C

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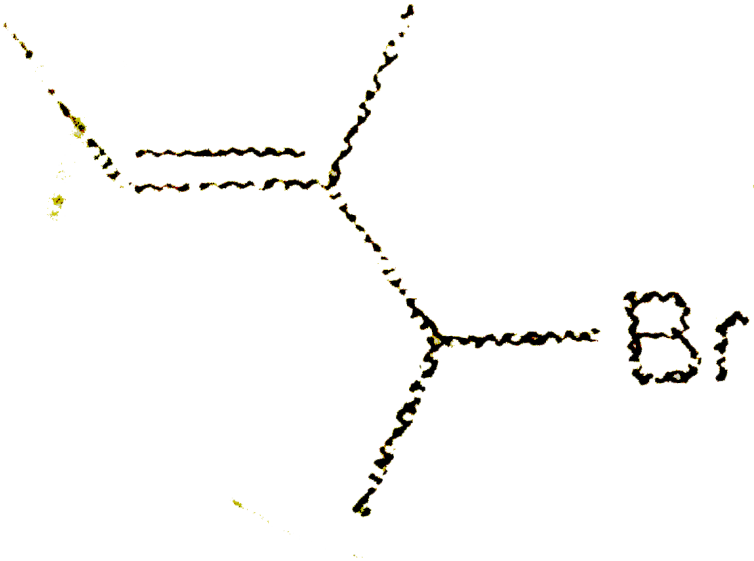
13. The $IUPAC$ name of



, is:

A. 2-Bromo-3-methylbut-3-ene

B. 4-Bromo-3-methylpent-2-ene

C. 2-Bromo-3-methylpent-3-ene

D. 4-Bromo-2, 3-dimethylbut-2-ene

Answer: B

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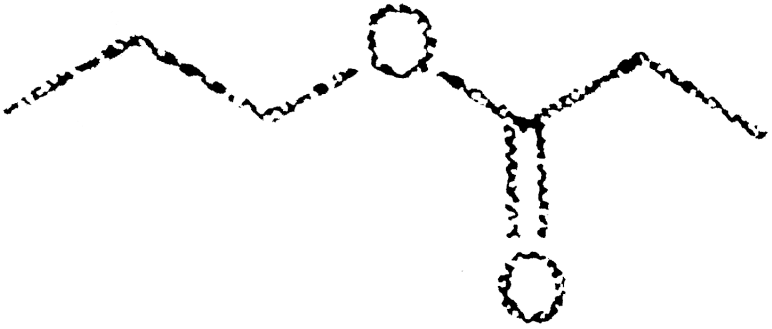
14. The $IUPAC$ name of the following compound is:



A. n-Propyl ethanoate

B. Ethyl propanoate

C. Pentanoic anhydride

D. n-Propyl propanoate

Answer: D

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15. The number of isomers of dibromobiphenyl (Biphenyl- C_6H_5) is:

A. 8

B. 10

C. 12

D. 4

Answer: C

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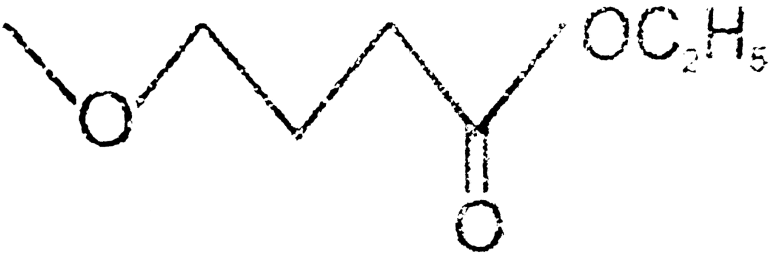
16. The $IUPAC$ name of the following compound is:



A. 3-Methoxy ethylpropanoate

B. Ethyl 4-methoxybutanoate

C. 1, 4-Diethoxybutane

D. Ethoxy 3-methoxybutyrate

Answer: B

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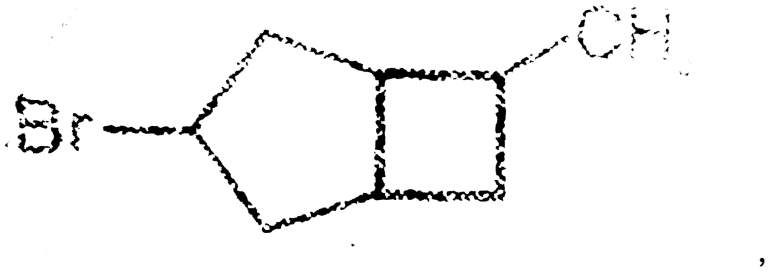
17. The correct $IUPAC$ name of the following compound is:



A. 2-Bromo-5-methylbicyclo$[5:4:0]$heptanes

B. 3-Bromo-7-methylbicyclo$[3:2:0]$heptanes

C. 3-Bromo-6-methylbicyclo$[3:2:0]$heptanes

D. 2-Methyl-6-bromobicyclo$[2:3:0]$heptanes

Answer: C

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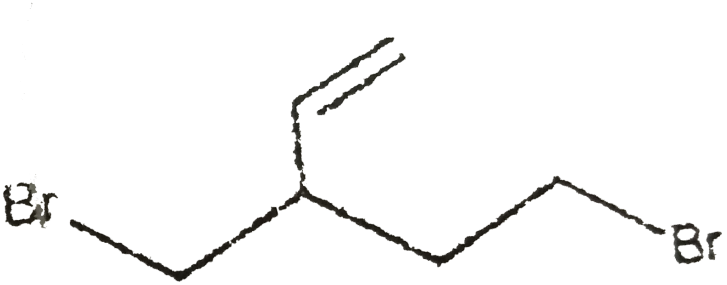
18. The $IUPAC$ name of the following compound is



A. 5-Bromo-3-(bromomethyl) pent-1-ene

B. 3-(1-Bromomethyl)-4-bromobut-1-ene

C. 1, 4-Dibromo-3-ethenylbutane

D. 1-Bromo-3-(bromomethy) but-4-ene

Answer: A

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Advanced Level Problems Part-5

1. What is the correct systematic name ($IUPAC$ name) for the compound below?

1 3-Isopropylhexane

2 2-Methyl-3-propylpentane

3 Ethyl isopropyl propyl methane

4 3-Hexylpropane

5 3-Ethyl-2-methylhexane

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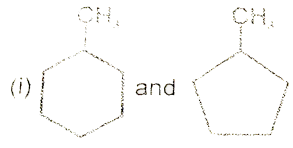
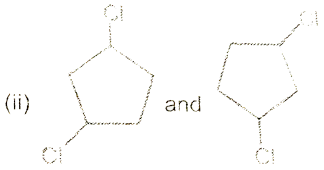
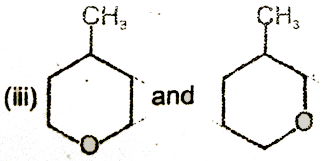
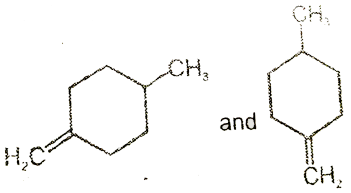
2. Which of the following is a pair of structral isomers ?

(i)  and

(ii)  and

(iii)  and

(iv)  and

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