



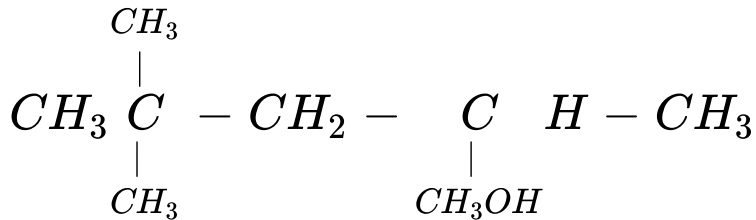
CHEMISTRY

BOOKS - CENGAGE CHEMISTRY

NOMENCLATURE OF ORGANIC COMPOUNDS

Mandatory Exercise

1. Write the IUPAC names of the following compounds :



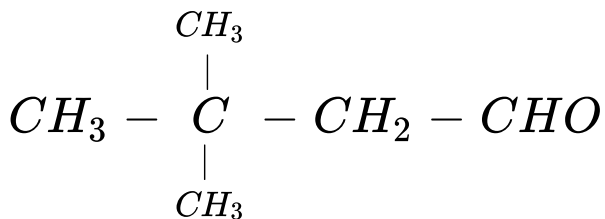
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2. Write the IUPAC names of the following compounds :



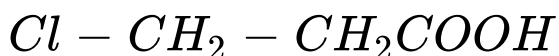
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3. Write the IUPAC names of the following compounds :



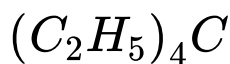
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4. Write the IUPAC names of the following compounds :



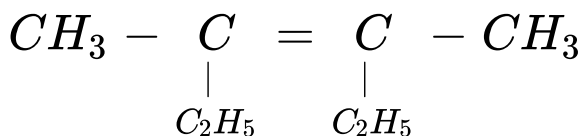
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5. Write the IUPAC names of the following compounds :



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6. Write the IUPAC names of the following compounds :



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7. Draw the structural formulae of the following compounds

3,4-dimethylhexane



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8. Draw the structural formulae of the following compounds

3-methylbutanol



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9. Draw the structural formulae of the following compounds

2,2,3,3-tetramethylpentane



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10. Draw the structural formulae of the following compounds

2,3-dihydroxypropanal



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11. Draw the structural formulae of the following compounds

3-methylbutan-2-one



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12. Draw the structural formulae of the following compounds

2-methyl-1,3-butadiene



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13. Draw the structural formulae of the following compounds

3-methylpentane



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14. Draw the structural formulae of the following compounds

ethane-1,2-diol



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15. Draw the structural formulae of the following compounds

1-chloro-2-methylpropane



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16. Draw the structural formulae of the following compounds

butan-2-ol



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17. Draw the structural formulae of the following compounds

1,2-dibromo-2-methylpropane



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18. Draw the structural formulae of the following compounds

3,4,6-trimethylnonane



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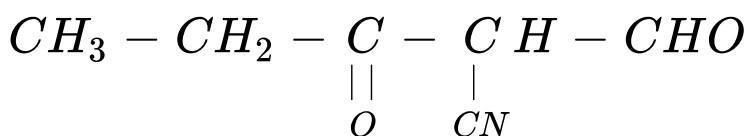
19. Draw the structural formulae of the following compounds

2-bromo-3-ethylhexane



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20. The correct IUPAC name of compound :



A. 2-cyano-3-oxopentanal

B. 2-formyl-3-oxopentanenitrile

C. 2-cyano-1, 3-pentanedione

D. 1, 3-dioxo-2-cyanopentane

Answer: B



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21. All the following IUPAC names are correct except:

A. 1-chloro-1-ethoxy propane

B. 1-amino-1-ethoxypropane

C. 1-ethoxy-2-propanol

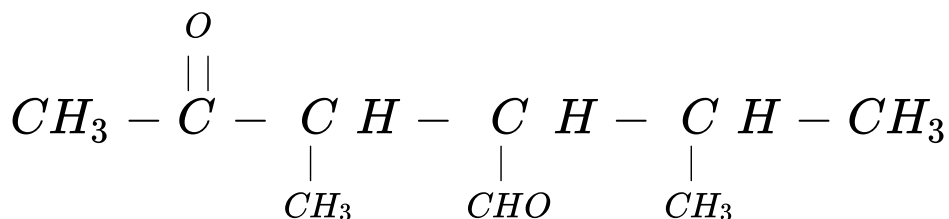
D. 1-ethoxy-1-propanamine

Answer: B



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22. The IUPAC name of compound



is :

A. 3, 5-Dimethyl-4-Formyl pentane

B. 1-Isopropyl-2-methyl-4-oxo butanal

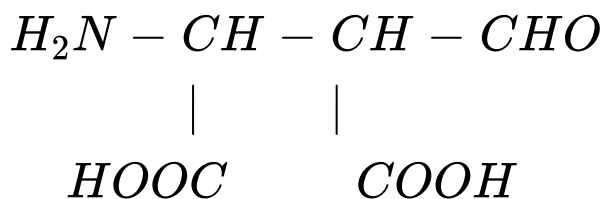
C. 2-Isopropyl-3-methyl-4-oxo pentanal

D. None of the above

Answer: C

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23. The IUPAC name of the structure is:



A. 3-amino-2-formyl butane-1, 4-dioic. Acid

B. 3-amino-2, 3-dicarboxy propanal

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

D. 1-amino-2-formyl succinic acid

Answer: C



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24. How many carbons are in simplest alkyne having two side chains?

A. 5

B. 6

C. 7

D. 8

Answer: B



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25. The compound which has one isopropyl group is:
group is:

A. 2, 2, 3, 3-tetramethyl pentane

B. 2, 2-dimethyl pentane

C. 2, 2, 3-triethyl pentane

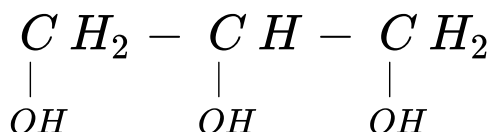
D. 2-methyl pentane

Answer: D



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26. The IUPAC name of the compound



A. 1, 2, 3-tri hydroxy propane

B. 3-hydroxy pentane-1, 5-diol

C. 1, 2, 3-hydroxy propane

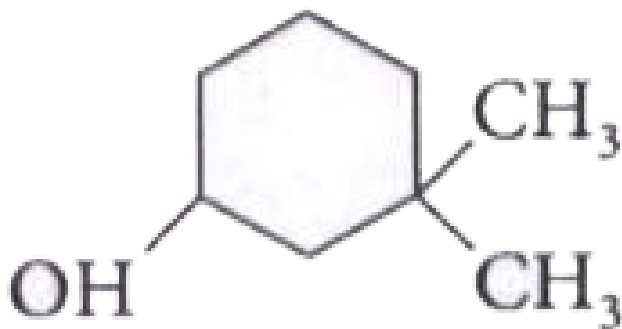
D. Propane-1, 2, 3-triol

Answer: D



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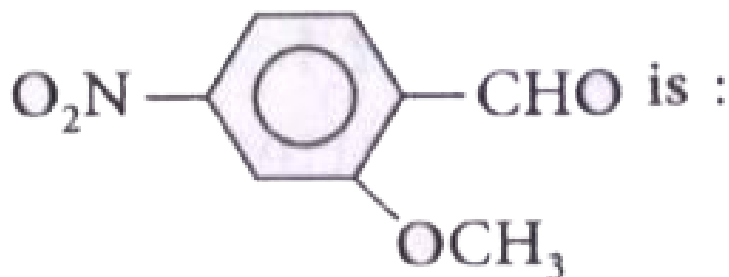
27. The IUPAC name of the given compound is



- A. 1, 1 dimethyl-3-hydroxy cyclohexane
- B. 3, 3 dimethyl-1-hydroxy cyclohexane
- C. 3, 3 dimethyl-1-cyclohexanol
- D. 1,1-dimethyl-3-cyclohexanol

Answer: C

28. The IUPAC name of



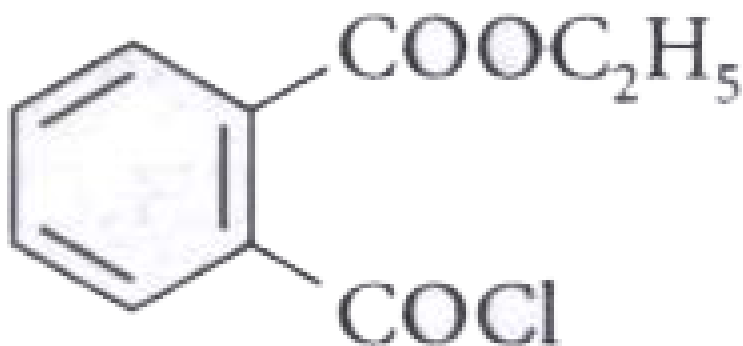
- A. 2-methoxy-4-nitro benzaldehyde
- B. 4-nitro anisaldehyde
- C. 3-methoxy-4-formyl nitrobenzene
- D. 2-formyl-4-nitroanisoie

Answer: A



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29. The IUPAC name of



A. 2-chlorocarbonyl ethyl benzoate

B. 2-carboxyethyl benzoyl chloride

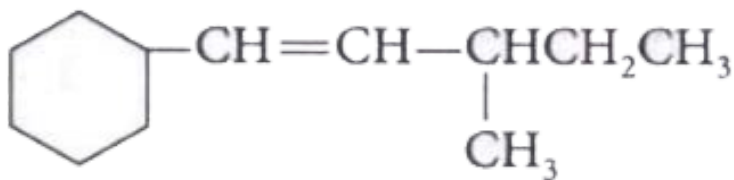
C. ethyl-2-(chlorocarbonyl) benzoaten

D. ethyl-1-(chlorocarbonyl) benzoate

Answer: C

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30. The IUPAC name of



A. 1-cyclohexyl-3-methyl-1-pentene

B. 3-methyl-5-cyclohexyl- pent-1-ene

C. 1-cyclohexyl-3-ethyl-but-1-ene

D. 1-cyclohexyl-3, 4-dmethyl-but-1-ene

Answer: A



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31. The IUPAC name of

$C_6H_5CH = CH - COOH$ is :

A. Cinnamic acid

B. 1-phenyl-2-carboxy ethane

C. 3-phenyl prop-2-enoic acid

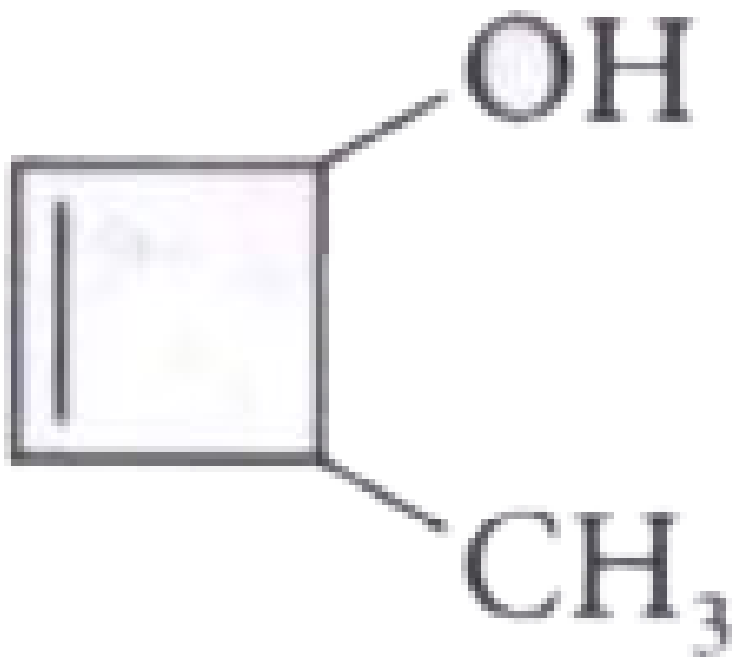
D. dihydroxy-3-phenyl propenoic acid

Answer: C



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32. The IUPAC name of



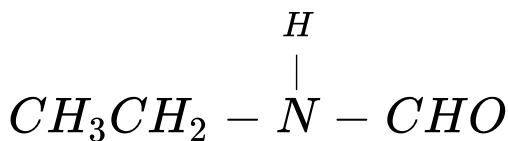
- A. 3-Methyl cyclo-1-butene-2-ol
- B. 4-Methyl cyclo-2-butene-1-ol
- C. 4-Methyl cyclo-1-butene-3-ol

D. 2-Methyl cyclo-3-butene-1-ol

Answer: B

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33. One among the following is the correct IUPAC name of the compound



A. N-Formyl amine ethane

B. N-Ethyl Formyl amine

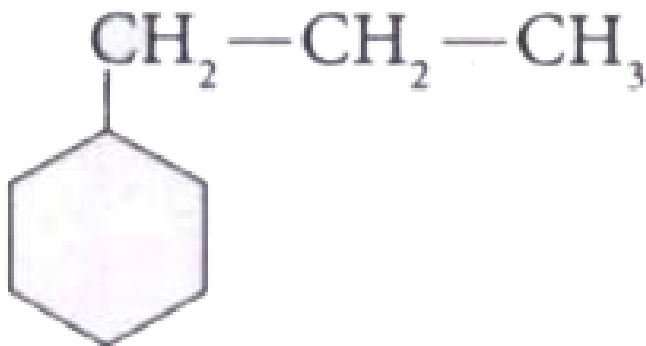
C. N-Ethyl methanamide

D. Ethyl amino methanal

Answer: C

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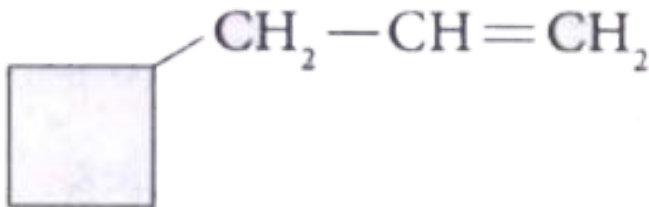
34. Write the IUPAC name of the following compounds:





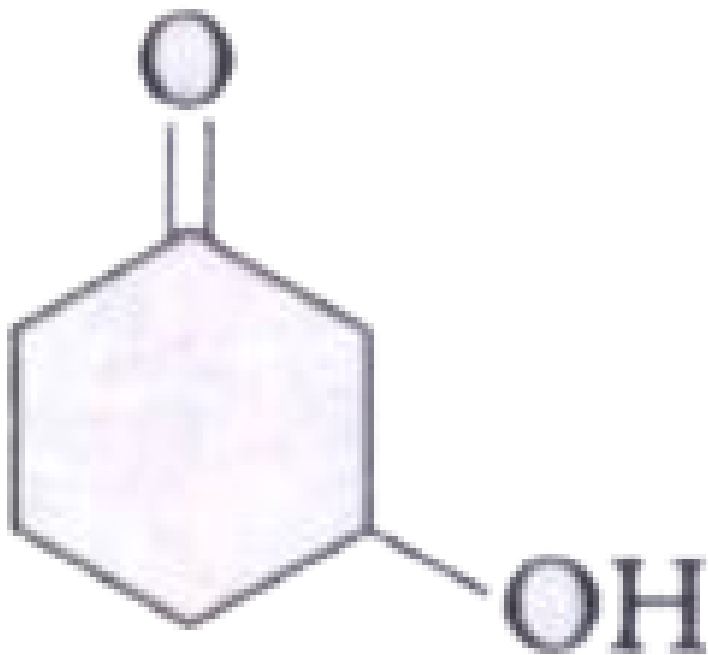
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35. Write the IUPAC name of the following compounds:



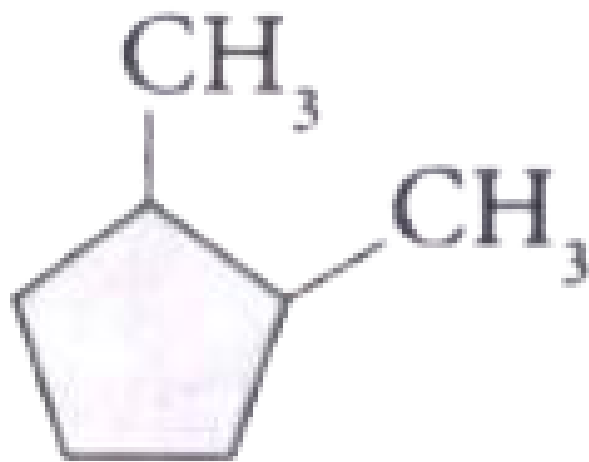
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36. Write the IUPAC name of the following compounds:



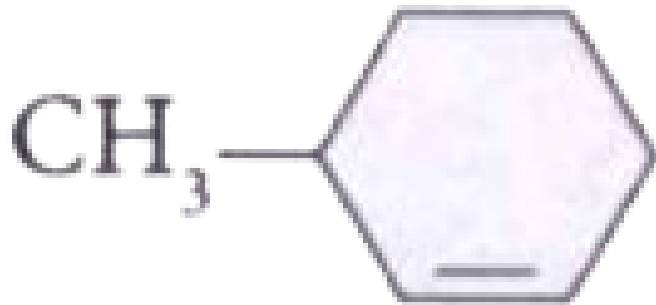
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37. Write the IUPAC name of the following compounds:



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38. Write the IUPAC name of the following compounds:



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39. Draw the structural formulae of the following compounds:

4-cyclohexylbut-3-en-2-one

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40. Draw the structural formulae of the following compounds:

5,6-dimethylcyclohex-2-en-1-one



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41. Draw the structural formulae of the following compounds:

cyclohexanecarboxylic acid



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42. Draw the structural formulae of the following compounds:

ethylcyclohexanecarboxylate



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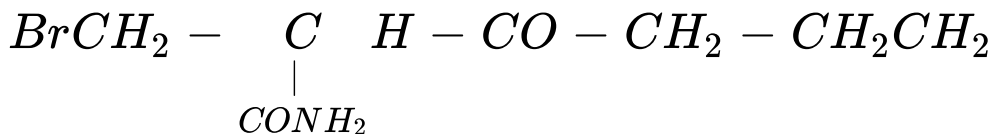
43. Draw the structural formulae of the following compounds:

cyclohexanamine



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44. The IUPAC name of



- A. 2-bromo methyl-3-oxo hexanamide
- B. 1-bromo-2-amino-3-oxo hexane
- C. 1-bromo-2-amino-n-propyl ketone
- D. 3-bromo-2-propyl propanamide

Answer: A



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45. Which of the following statements is not true about a homologous series?

A. Adjacent members of a group differ by a mass of 14

B. Adjacent members of a group differ by one $-CH_2$ group.

C. Members of a homologous series can be prepared by the same general methods.

D. Members of a homologous series have the same physical and chemical properties.

Answer: D



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46. The large number of organic compounds is due

A. the valency of carbon

B. the small size of carbon

C. a special property of carbon, known as
catenation

D. All of the above

Answer: D



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47. Which of the following compounds will have only primary and tertiary carbon?

A. Pentane

B. 2-Methylbutane

C. 2, 3-Dimethylbutane

D. 2-Bromo-2-methylpropane

Answer: D



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48. Which of the following compounds will have only primary and secondary carbon?

A. Propane

B. 2, 2, 3-Trimethylpentane

C. 2-Methylpropane

D. neo pentane

Answer: A



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49. The IUPAC name of $(CH_3)_2CHCH(CH_3)_2$

is

A. 1, 1, 2, 2-tetramethylethane

B. 1, 2-diisopropylethane

C. 2, 3-dimethylbutane

D. 2, 3, 3-trimethylbutane

Answer: C



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50. The IUPAC name of

$CH_3, OHCH_2CH_2CH_3$ is

- A. propoxymethane
- B. 1-methoxypropane
- C. methylpropyl ether
- D. propylmethyl ether

Answer: B



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51. The IUPAC name of CH_3CHO is

- A. acetaldehyde

B. formylmethane

C. ethanal

D. methylaldehyde

Answer: C



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52. The IUPAC name for CH_3CH_2COOH is

A. ethane carboxylic acid

B. ethanoic acid

C. ethylformic acid

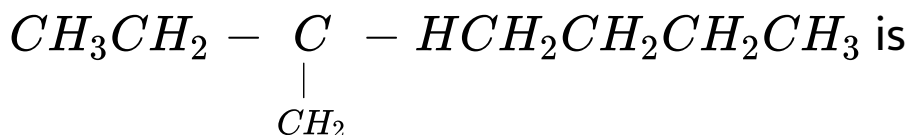
D. propanoic acid

Answer: D



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53. The IUPAC name of



A. 5-methylheptane

B. 3-methylheptane

C. 1-methyl-1-ethylpentane

D. 2-ethylhexane

Answer: B



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54. The IUPAC name of $CH_3COCH_2CH_2CH_3$

is

A. 2-pentanone

B. 4-pentanone

C. methylpropylketone

D. ethylacetone

Answer: A



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55. The IUPAC name of CCl_3CHO is

A. 1, 1, 1-trichloroethanal

B. 2, 2, 2-trichloroethanal

C. Trichloroacetaldehyde

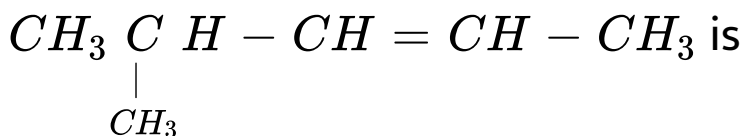
D. chloral

Answer: B



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56. The IUPAC name of



A. 2-methylpentane

B. 4-methylpent-2-ene

C. 2-hexene

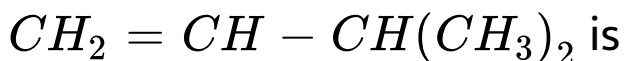
D. 2,4-dimethylbutene

Answer: B



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57. The IUPAC name of



A. 1-isopropylethylene

B. 1, 1-dimethyl-2-propane

C. 3-methyl-1-butene

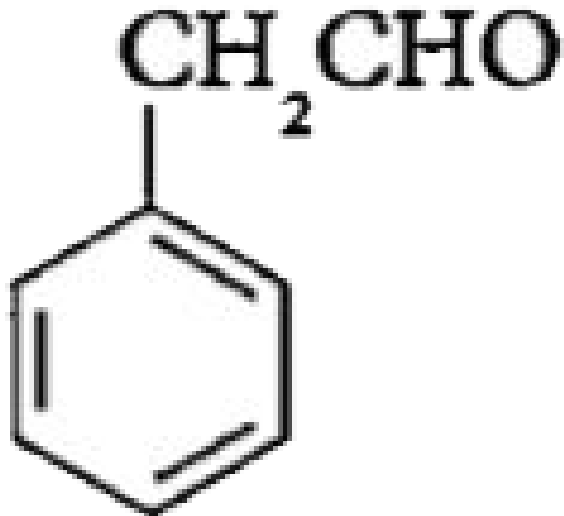
D. 2-vinylpropane

Answer: C



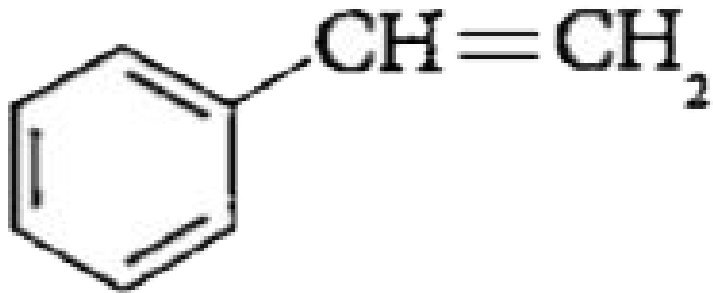
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58. Write the IUPAC name of the following compounds:



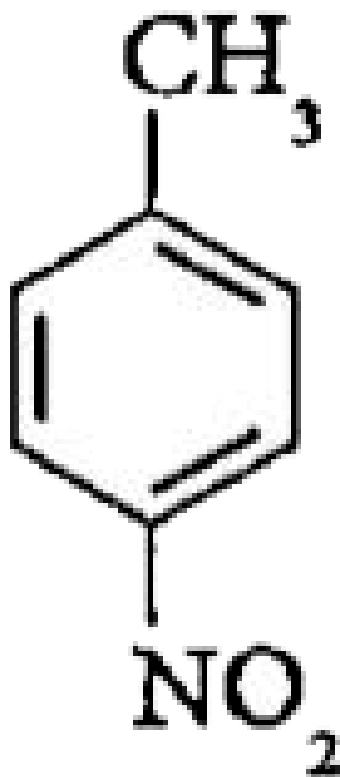
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59. Write the IUPAC name of the following compounds:



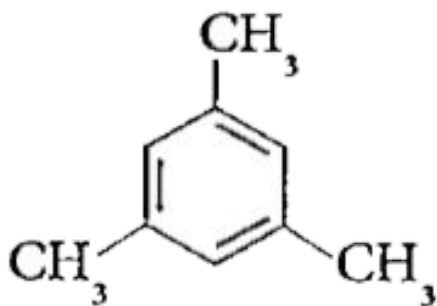
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60. Write the IUPAC name of the following compounds:



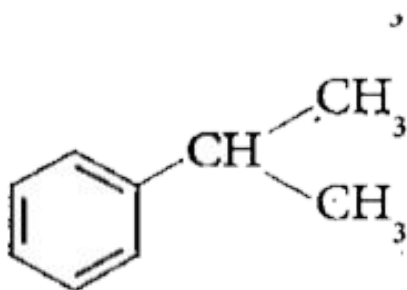
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61. Write the IUPAC name of the following compounds:



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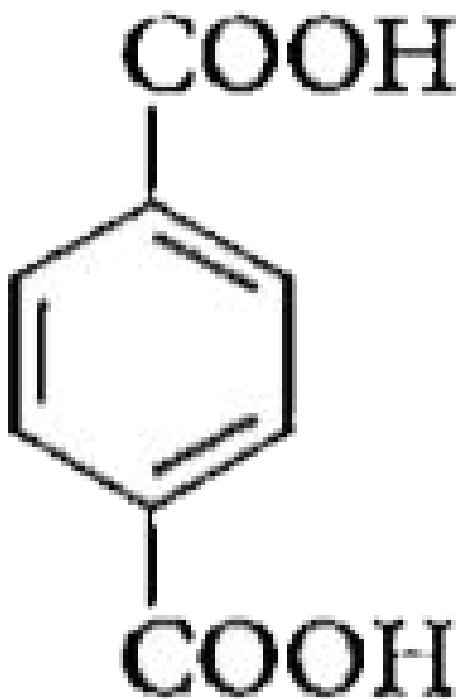
62. Write the IUPAC name of the following compounds:





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63. Write the IUPAC name of the following compounds:





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64. Draw the structural formulae of the following compounds:

2-phenylpropene



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65. Draw the structural formulae of the following compounds:

3-chlorotoluene



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66. Draw the structural formulae of the following compounds:

4-bromobenzoic acid

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67. Draw the structural formulae of the following compounds:

2-phenylpropene

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68. The IUPAC name of $CH_3CH_2C(=CH_2)CH_3$ is

- A. 3-methylbutene-1
- B. 2-methylbutene-1
- C. vinylmethylethane
- D. propylethene-1

Answer: B



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69. The IUPAC name of
$$\begin{array}{c} CH_3 - CH - CHO \\ | \\ CH_2 - CH_3 \end{array}$$
 is

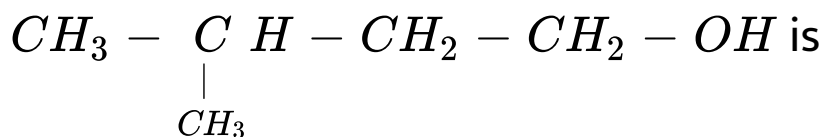
- A. 2-methylbutanal
- B. butan-2-aldehyde
- C. 2-ethylbutanal
- D. 3-methylisobutyraldehyde

Answer: A



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70. The IUPAC name of



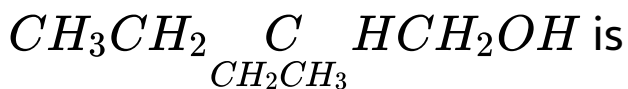
- A. pentanol
- B. 1-pentanol
- C. 2-methyl-4-butanol
- D. 3-methyl-1-butanol

Answer: D



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71. The IUPAC name of



A. 2-methyl-1-pentanol

B. 2-ethylbutanol-1

C. 2-ethylpentanol-1

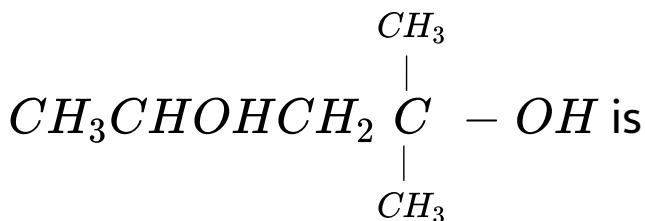
D. 3-ethylbutanol-1

Answer: B



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72. The IUPAC name of for



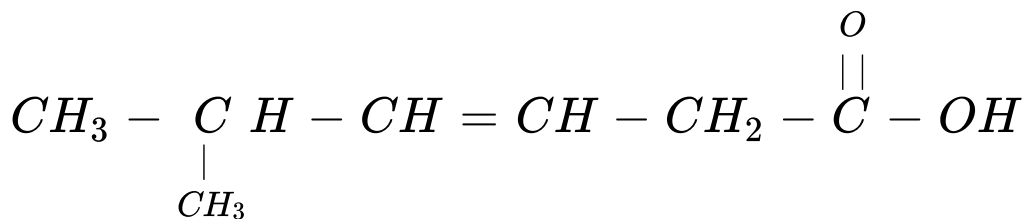
- A. 2-methyl-2,4-pentanediol (
- B. 1,1-dimethyl-1,3-butanediol
- C. 1,3,3-trimethyl-1,3-propanediol
- D. 4-methyl-2,4-pentanediol

Answer: A



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73. The IUPAC name for



is

A. 5-carboxy-2-methylpentene

B. 4-isopropyl-3-butenoic acid

C. 5-methyl-4-hexenoic acid

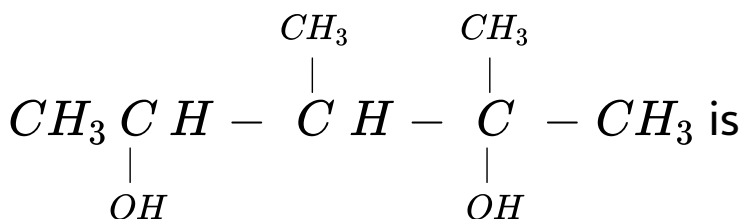
D. none of these

Answer: D



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74. The IUPAC name of



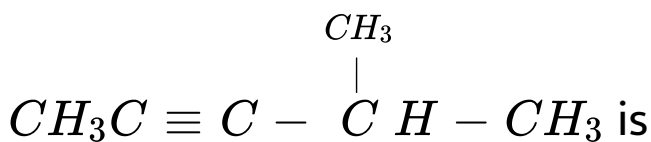
- A. 1, 1, 2-trimethyl-1, 3-butanediol
- B. 1, 2-dimethyl-2, 4-pentanediol
- C. 2, 3-dimethyl-2, 4-pentanediol
- D. 1, 2, 3, 4-tetramethyl-1, 3-propanediol

Answer: C



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75. The IUPAC name of



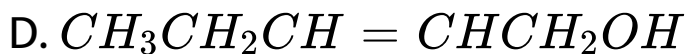
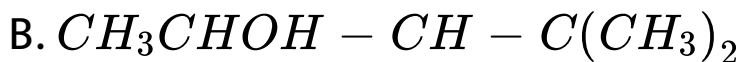
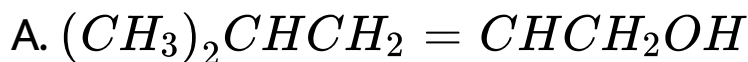
- A. 4-methyl-2-pentyne
- B. methylisopropylacetylene
- C. 4, 4-dimethyl-2-butyne
- D. 2-methyl-4-pentyne

Answer: A



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76. The structure of 4-methyl-2-penten-1-ol is



Answer: A



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77. Which of the following compounds are named correctly?

A. $(CH_3)_2C = CH_2CH_2CHO$ (5-methyl-2-hexanal)

B. $(CH_3)_2CHCH_2C \equiv C - COOH$ (5-methyl-2-hexanoic acid)

C. $CH_3CH_2CH_2CH(CH_3)COOH$ (2-methylhexanoic acid)

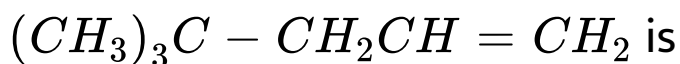
D. $CH_3CH_2CH = CH - COCH_3$ (3-hexen-5-one)

Answer: B



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78. The IUPAC name of



A. 2, 2-dimethylpent-4-ene

B. 2, 2-dimethylhex-4-ene

C. 4, 4-dimethylpent-1-ene

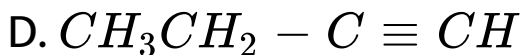
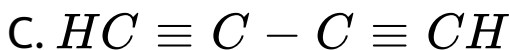
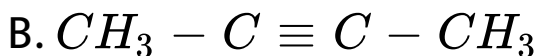
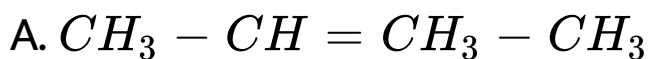
D. hex-1-ene

Answer: C



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79. In which of the following are all carbon atoms sp -hybridized?

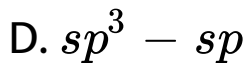
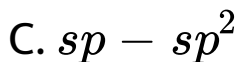
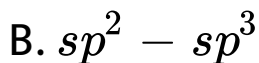
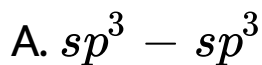


Answer: C



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80. The hybridization of carbon atoms in the C-C single bond of $HC \equiv C - CH = CH_2$ is

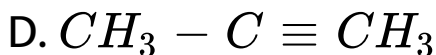
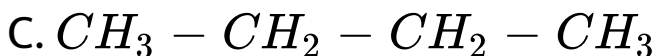
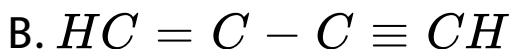
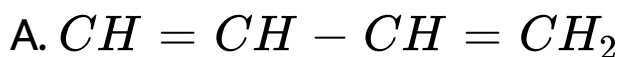


Answer: C



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81. Which of the following compounds have more than one type of hybrid carbon?

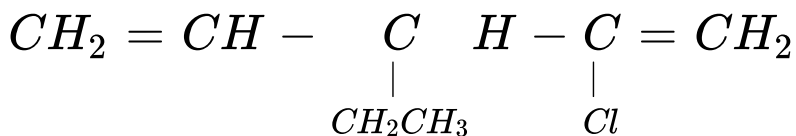


Answer: D



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82. The IUPAC name of compound is



- A. 3-ethyl-4-chloro-1, 4-pentadiene
- B. 2-chloro-3-ethyl-1, 4-pentadiene
- C. 4-chloroethenyl-1-pentene
- D. 3-ethenyl-4-chloro-4-pentene

Answer: B

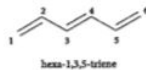
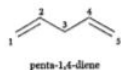
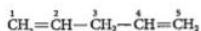
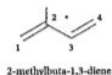
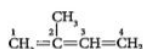


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Consolidated Exercise

1. Comprehension Bond line notation of organic molecules It is a simple and convenient method of representing structures. In this notation, bonds are represented by lines and carbon atoms by line ends and intersections. It is assumed that the

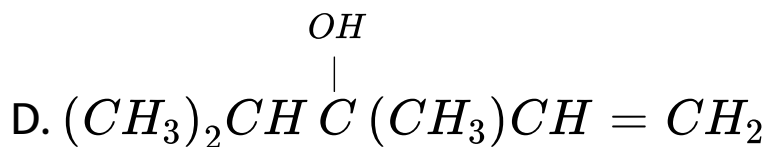
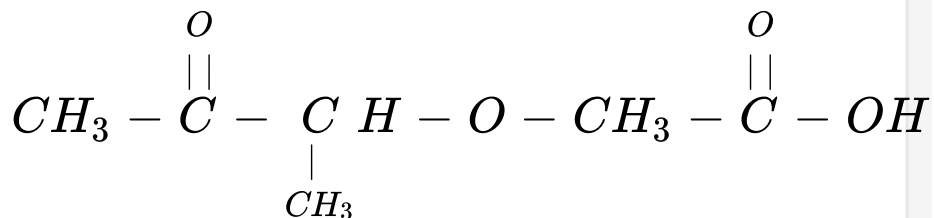
required number of H atoms are present wherever necessary to satisfy the tetravalency of carbon. For example, 2-methylbuta-1,3-diene, penta-1,4-diene and hexa-1,3,5-triene may be represented as follows:



Rewrite the following structural formulae in bond line notation :



B.

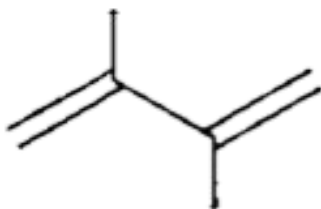


Answer: A::B::C::D



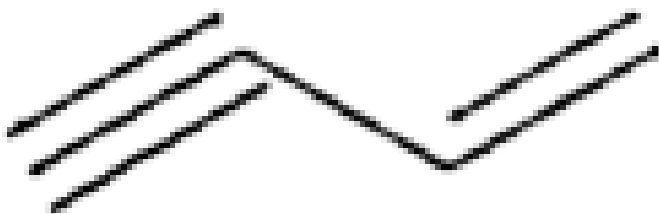
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2. Give the IUPAC names of the following compounds :



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3. Give the IUPAC names of the following compounds :



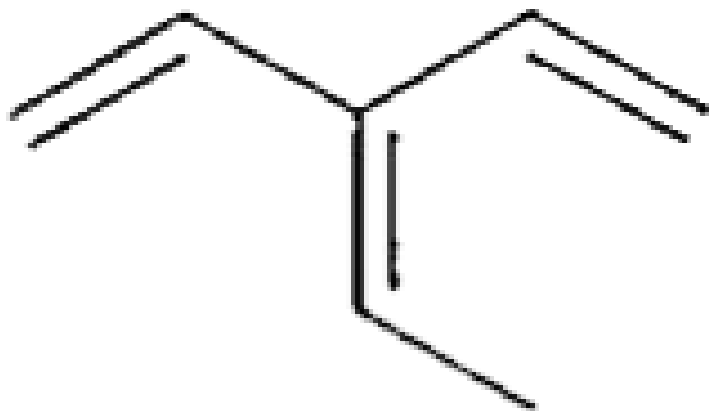
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4. Give the IUPAC names of the following compounds :



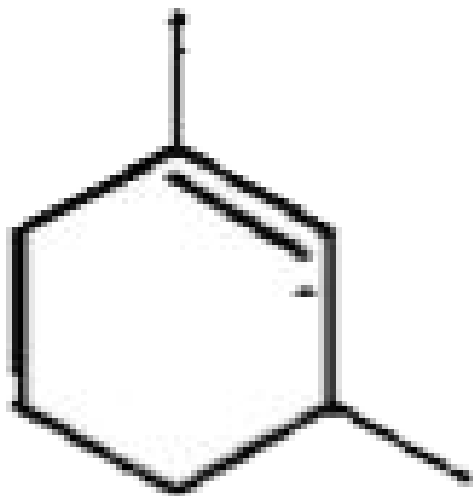
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5. Give the IUPAC names of the following compounds :



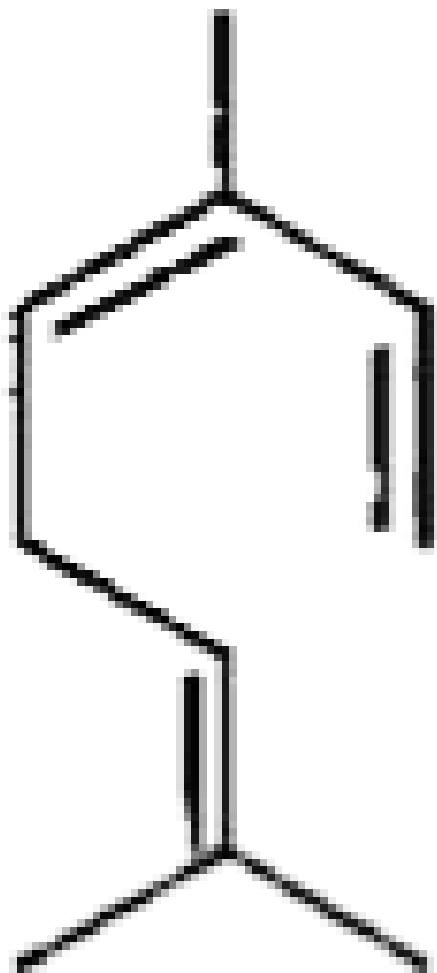
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6. Give the IUPAC names of the following compounds :



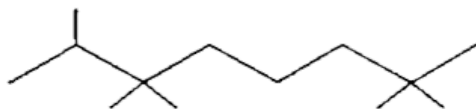
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7. Give the IUPAC names of the following compounds :



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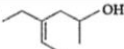
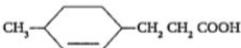

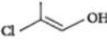
8. Give the IUPAC names of the following compounds :



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Challenging Exercise

1. Match the following

Column A	Column B
1. 	(p) Phenol
2. 	(q) 4-ethylhex-4-en-2-ol
3. 	(r) $\text{CH}_3-\text{HC}=\underset{\text{C}_2\text{H}_5}{\text{CH}}-\overset{\text{OH}}{\text{CH}}-\text{CH}_3$
4. $\text{CH}_2-\underset{\text{Cl}}{\text{C}}=\underset{\text{CH}_3}{\text{CH}}-\text{CH}_2\text{OH}$	(s) 3-4,methylcyclohex-2-enylpropanoic acid
	(t) 
	(u) 4-chloro-3-methylbut-2-en-1-ol



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2. Draw the structural formulae of the following compounds:

2-aminoethanol



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3. Draw the structural formulae of the following compounds:

2-hydroxy-2-methylpropanenitrile

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4. Draw the structural formulae of the following compounds:

oct-4-en-1-yne

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5. Draw the structural formulae of the following compounds:

hept-2-en-5-yne



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6. Draw the structural formulae of the following compounds:

4-ethenylhept-5-en-1-yne



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7. Draw the structural formulae of the following compounds:

N-ethyl-N-methylpropanamide



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8. Draw the structural formulae of the following compounds:

trimethylamine



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9. Draw the structural formulae of the following compounds:

2-methoxypropane



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10. Draw the structural formulae of the following compounds:

3-methylphenylpropanoate



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11. Draw the structural formulae of the following compounds:

N-phenylethanamide



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12. Draw the structural formulae of the following compounds:

2-oxocyclohexanecarboxylic acid



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13. Draw the structure for the following compounds. Explain why the given name is wrong and give the correct IUPAC name in each case

A. 1-methylpentane

B. 2-ethylbutane

C. 1,1,3-trimethylpropane

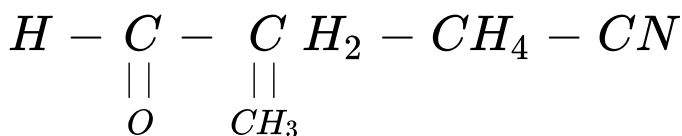
D. 3-methyl-1,3-butadiene

Answer:



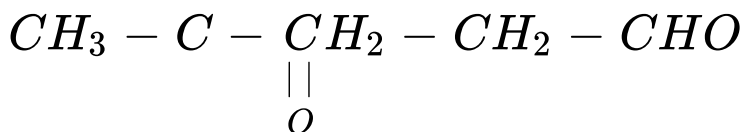
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14. Write the IUPAC names of the following compounds:



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15. Write the IUPAC names of the following compounds:





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Olympiad And Ntse Level Exercises

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



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2. The number of 1° , 2° , and 3° H atoms in 2,5,6-trimethyl octane, respectively, is:

A. 16,5,3

B. 15,6,3

C. 16,6,3

D. 15,5,2

Answer: B



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

A. 18,2

B. 18,1

C. 17,2

D. 17,1

Answer: A



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4. The IUPAC name of vinyl acetylene is:

A. Pent-1-en-4-yne

B. Pent-4-yn-1-ene

C. But-1-en-3-yne

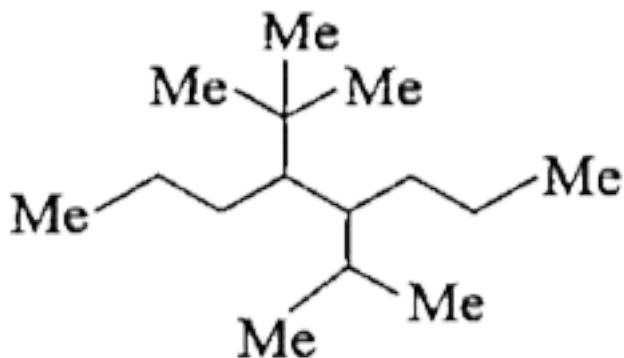
D. But-1-yn-3-ene

Answer: C



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5. Give the IUPAC name of



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

heptane

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

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

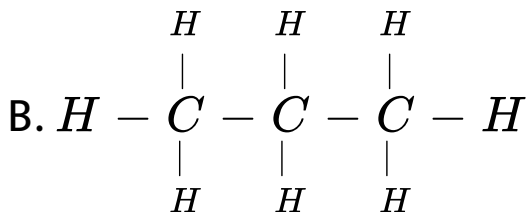
D. 2-Methyl-3-propyl-4-isopropyl heptane

Answer: C

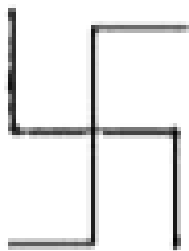


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6. Which of the following is condensed structural formula?



D.



Answer: C



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7. The IUPAC name of acrolein is:

A. But-2-enal

B. Prop-2-enal

C. But-3-enal

D. 2-Methyl prop-2-enal

Answer: B



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8. The IUPAC name of PhCN is:

A. Phenyl cyanide

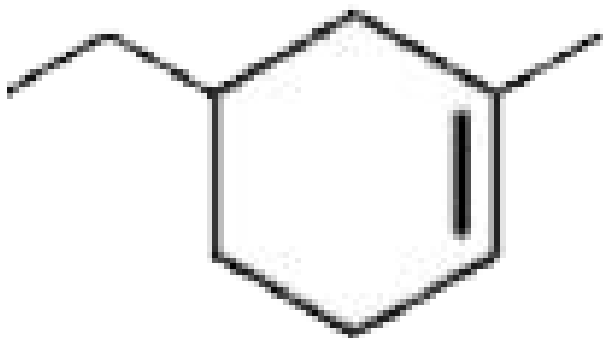
B. Benzonitrile

C. Benzene nitrile

D. All

Answer: C

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9.

Correct IUPAC name

A. 1-Methyl-3-ethylcyclohexene

B. 5-Ethyl-1-methylcyclohexene

C. 2-Ethyl-4-methylcyclohexene

D. 3-Ethyl-1-methylcyclohexene

Answer: B

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IUPAC name will be :

A. Hex-5-en-1-yne

B. Hex-1-en-5-yne

C. Hex-6-en-1-yne

D. Hex-1-en-6-yne

Answer: B



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