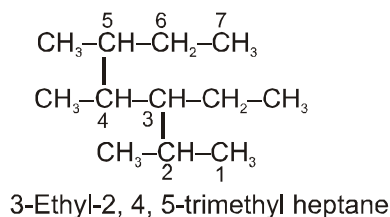


ANSWER KEY

Exercise # 1

- A-1.** (a) (1° , 2° , 3°) H atoms = (9, 4, 1) (b) (1° , 2° , 3°) H atoms = (3, 10, 1)
 (c) (1° , 2° , 3°) H atoms = (6, 16, 0) (d) (1° , 2° , 3°) H atoms = (0, 18, 4)
- A-2.** (a) 2° (b) 3° (c) 1°
- A-3.** (a) 1° (b) 2° (c) 3° (d) 3°
- A-4.** (a) 3° carbon (b) 2° carbon (c) 4° carbon
- A-5.** 11
- A-6.** (a) 22 σ bonds (b) 19 σ bonds, 5 π bonds
- A-7.** 7
- A-8.** $\text{CH}_2=\overset{\text{sp}^2}{\text{C}}=\overset{\text{sp}}{\text{CH}}-\overset{\text{sp}^2}{\text{CH}_2}-\overset{\text{sp}^3}{\text{C}}\equiv\overset{\text{sp}}{\text{C}}-\overset{\text{sp}}{\text{CH}_2}-\overset{\text{sp}^3}{\text{CH}_2}-\overset{\text{sp}^2}{\text{COOH}}$
- A-9.** $\text{H}_2\text{C}=\text{C}=\text{CH}_2$; M.W. = 40.
- A-10.** (a) Homocyclic, alicyclic, saturated (b) Homocyclic, aromatic, unsaturated
 (c) Heterocyclic, alicyclic, saturated (d) unsaturated.
- B-1.** (a) 2-Methyl propane (b) 2, 2-Dimethyl propane
 (c) 2-Methyl butane (d) 2, 2-Dimethyl butane
- B-2.** (a) isopropyl group (b) sec-butyl group (c) Tert-butyl group
 (d) Ethyl group (e) n-propyl group
- B-3.** (a) 2,2,3-Trimethylpentane (b) 5-(1,2-Dimethylpropyl)nonane
 (c) 5-Ethyl-3-methyloctane (d) 4-Ethyl-2,2,6-trimethylheptane
 (e) 4-Ethyl-3, 7-dimethylnonane (f) 4-(1,1-Dimethylethyl)-5-(1-methylethyl) octane
- B-4.** (a) 1-methylethyl (b) 1-methylpropyl (c) 1, 2-dimethylpropyl (d) 2, 3-dimethylbutyl
- B-5.** (a) 1-Bromo-3-chloro-4-methylpentane (b) 1-Chloro-3-ethyl-4-iodopentane
 (c) 4-Bromo-3-chloro-6-nitrooctane (d) 2-Bromo-2-chloro-5-fluoro-4-methylheptane
- B-6.** (a) s-Butylcyclohexane (b) t-Butylcyclohexane
 (c) Isopropylcyclohexane (d) Neopentylcyclopentane
- B-7.** (a) ring (b) side chain (c) ring (d) ring (e) side chain (f) side chain
- B-8.** 7



B-9.

(a)



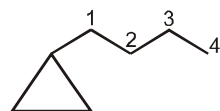
Propyl cyclobutane

(b)



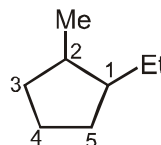
Propyl cyclopropane

(c)



1-Cyclopropyl butane

(d)



1-Ethyl-2-methyl cyclopentane

C-1.

(a) Pent-2-ene

(c) 3-Methylbut-1-ene

(b) But-1-yne

(d) 4-Ethyl-2-methylhex-1-ene

C-2.

(a) ethenyl

(b) ethynyl

(c) 1-methylethenyl

(d) prop-2-enyl

(e) ethylidene

(f) 1-methylethylidene

C-3.

General formula $\rightarrow C_n H_{2n}$

$H_2C = CH_2$

Ethylene

Ethene

$CH_3 - CH = CH_2$

Propylene

Propene

$CH_3 - CH_2 - CH = CH_2$

α -Butylene

1-Butene

C-4.

General formula $\rightarrow C_n H_{2n-2}$

(A) $CH \equiv CH$

Acetylene

Ethyne

(B) $CH_3 - C \equiv CH$

Methyl acetylene (Allylene)

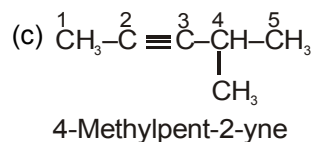
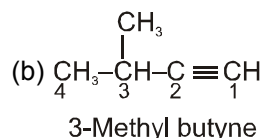
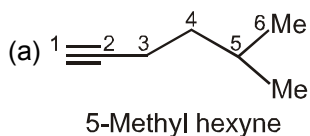
Propyne

(C) $CH_3 - C \equiv C - CH_3$

Dimethyl acetylene (Crotonylene)

But-2-yne

C-5.



C-6.

(a) 4-Methylpent-2-yne

(b) 4-Propylhept-2-yne

(c) 3,4,4-Trimethylhex-1-yne

C-7.

(a) cyclohexylethene

(b) 1-Ethylcyclohex-1-ene

(c) 1-Ethenylcyclohex-1-ene

(d) 1-cyclohex-1-enylbuta-1,3-diene

C-8.

3

3-Bromo-6-ethylcyclohexa-1,4-diene

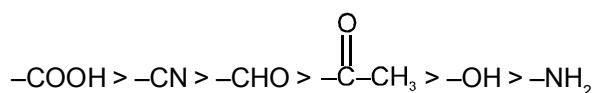
C-9.

5

5-Ethyl-2,6-dimethyl-4-(3-methylbutyl)oct-2-ene

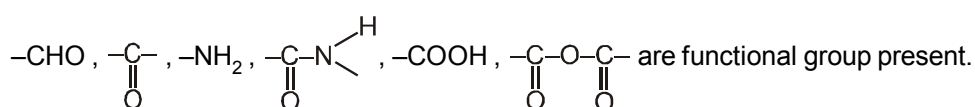
D-1.

Seniority order of functional groups :



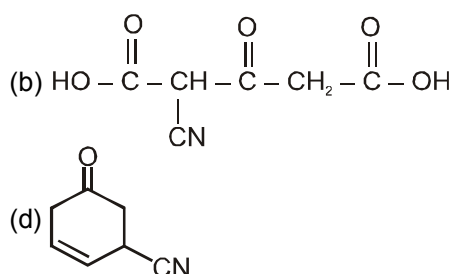
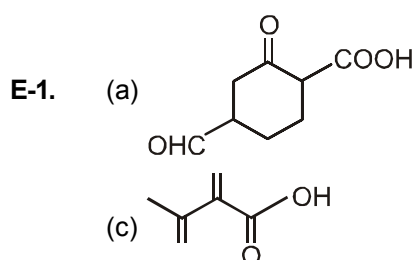
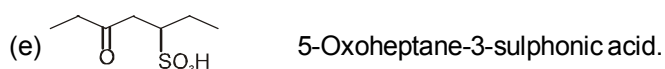
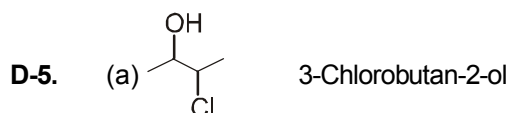
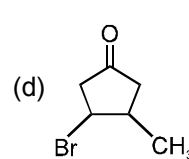
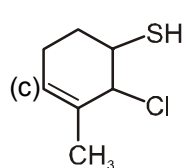
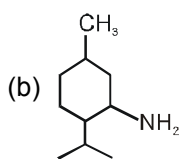
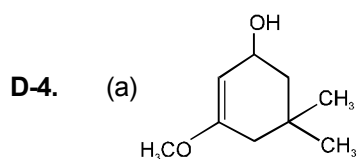
D-2.

6



- D-3.** (a) 4-Methylpent-2-en-1-ol
(c) N,N-Dimethylpropan-2-amine
(e) Methoxyethane

- (b) 4, 5-Dimethylhex-5-ene-2-thiol
(d) 1-Chloro-4-methylpentan-2-one
(f) Ethoxyethane



- E-2.** (a) Methyl-2-ethylbutanoate
(b) Ethyl-3-methylpent-4-en-1-oate
(c) 3,3-Dimethyl-2-(1-methylethyl)butanamide

E-3. 7

E-4. $9 + 6 = 15$
 $X = 9, Y = 6$
4-(But-2-enyl)non-6-enoic acid

- F-1.** (a) Methylbenzene
(c) Diphenylmethane

- (b) Isopropylbenzene
(d) 1-Chloro-1-phenylethane.

- F-2.** (a) 5-Formyl-2-nitrobenzoic acid
(c) 4-Nitroaniline

- (b) 4-Ethoxycarbonylbenzoic acid
(d) 3-Methylphenol

- F-3.** 3
(a) Cyclohexylbenzene
(c) 1, 2-Dichloro-4-ethyl-5-nitrobenzene

- (b) 4-Bromo-3, 6-diphenyloctane
(d) 4-Chloro-1-nitro-2-propylbenzene

- F-4.** (a) Ethanoic-2-methylpropanoic anhydride
(c) Pent-2-enedioic anhydride

- (b) Benzenecarboxylic anhydride
(d) Cyclohexane-1, 2-dicarboxylic anhydride

- F-5.** (a) Methyl methanoate
(c) Phenyl benzenecarboxylate

- (b) 2-Ethoxycarbonylethanoic acid
(d) 2-Ethanoyloxybenzenecarboxylic acid

- F-6.** (a) 2-Methylpropanamide
(c) N, N-Dimethyl-2-methylpropanamide

- (b) N-Methylpropanamide
(d) N-Phenylbenzenecarboxamide

F-7. 2
f and g are correct.