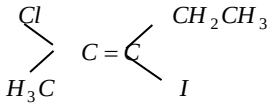
# Purification, Classification and Nomenclature of Organic compounds

## SET Self Evaluation Test - 22

**1.** IUPAC name for the compound



**[CBSE PMT 1998]**

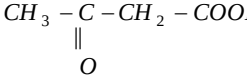
(a) *trans* 3 iodo, 4-chloro, 3-pentene

(b) *cis* 3 chloro, 3-iodo, 2-pentene

(c) *trans* 2 chloro, 3-iodo, 2-pentene

(d) *cis* 3 iodo, 4-chloro, 3-pentene

**2.** The IUPAC name of the following structure is



**[RPMT 1997]**

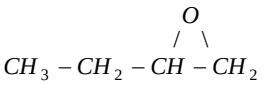
(a) 3-ketobutanoic acid

(b) 2-ketobutanoic acid

(c) 4-ketobutanoic acid

(d) 3-oxopropanoic acid

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

 is

**[UPSEAT 2001]**

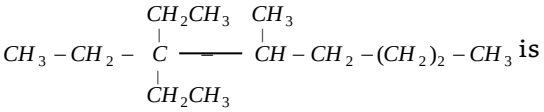
(a) 1, 2-epoxy butane

(b) Ethyl methyl ether

(c) Keto pentanone

(d) None of these

**4.** The IUPAC name of

 is

**[CPMT 2000]**

(a) 2, 2-diethyl-5-methyldecane

(b) 3, 3-ethyl-5-methyldecane

(c) 3, 3-diethyl-5-methylhexane

(d) 3,3-diethyl-4-methyl octane

**5.** The emperical formula of compound is $CH_2O$. If its molecular weight is 180. The molecular formula of the compound is

**[AIIMS 1999; CPMT 1999; AFMC 1999; BHU 1999]**

(a) $C_3H_6O_3$ (b) $C_4H_8O_4$

(c) $C_6H_{12}O_6$ (d) $C_5H_{10}O_5$

**6.** Accurate determination of atomic masses is done with the instrument called as **[Kerala (Med.) 2002]**

(a) Spectrophotometer

(b) Mass spectrometer

(c) Atomic absorption spectrometer

(d) Calorimeter

**7.** In a compound *C*, *H* and *N* atoms are present in 9 : 1 : 35 by weight. Molecular weight of compound is 108. Molecular formula of compound is **[AIEEE 2002]**

(a) $C_2H_6N_2$ (b) $C_3H_4N$

(c) $C_6H_8N_2$ (d) $C_9H_{12}N_3$

**8.** An alkane has a *C/H*-ratio (by mass) of 5.1428. Its molecular formula is **[KCET (Engg./Med.) 1999]**

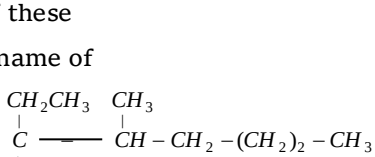
(a) $C_5H_{12}$ (b) $C_6H_{14}$

(c) $C_8H_{18}$ (d) $C_7H_{10}$

**9.** 58 *ml* of $\frac{N}{5}H_2SO_4$ are used to neutralize ammonia given by 1 *g* of organic compound. Percentage of nitrogen in the compound is

(a) 34.3 (b) 82.7

(c) 16.2 (d) 21.6

**10.** The IUPAC name for  is

**[AIIMS 1992; MNR 1992; JIPMER 1997]**

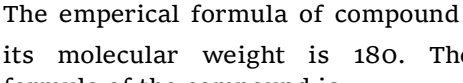
(a) 1, 1-dimethyl-1, 3-butanediol

(b) 2-methyl-2, 4-pentanediol

(c) 4-methyl-2, 4-pentanediol

(d) 1, 3, 3-trimethyl-1, 3-propanediol

**11.** Choose the correct IUPAC name of the compound



(a) 2, 3-dimethyl-4-hexyne

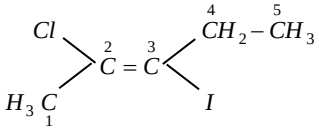
(b) 4,5-dimethyl-2-hexyne

(c) 5-propyl-2-pentyne

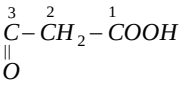
(d) 2-propyl-3-pentyne

# Answers and Solutions

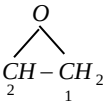
**(SET -22)**

**1.** (c) 

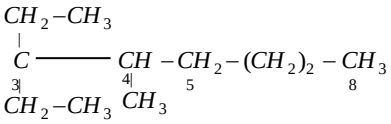
Trans 2-chloro, 3-iodo, 2-pentene

**2.** (a) 

3-keto butanoic acid

**3.** (a) 

1, 2 epoxy butane

**4.** (d) 

3, 3 di ethyl –4-methyl octane.

**5.** (c) Molecular formula = (Emperical formula)$_n$

$$n = \frac{\text{Molecular weight}}{\text{Emperical formula wt.}} = \frac{180}{30} = 6$$

$$= (CH_2O)_6 = C_6H_{12}O_6$$

**6.** (b) Atomic masses, determined by the mass spectrometer.

**7.** (c) Molecular weight of compound = 108

$C^{12} \rightarrow 12 \times 6 = 72$

$H^1 \rightarrow 1 \times 8 = 8$

$N^{14} \rightarrow 14 \times 2 = 28$

Total molecular weight = 108

$\therefore$ Molecualr formula $= C_6H_8N_2$

**8.** (b) The ratio of $C/H$ in an alkane is 5.1428.

Alkanes have General formula $C_nH_{2n+2}$

The mass ratio of $\frac{C}{H}$ is $\frac{12n}{2n+2}$ or $\frac{6n}{n+1}$

$\frac{6n}{n+1} = 5.1428$

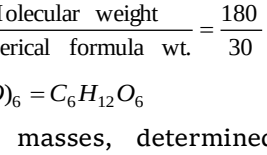
$6n = 5.1428n + 5.1428 = 0.8572n + 5.1428$

$n = \frac{5.1428}{0.8572} = 6$

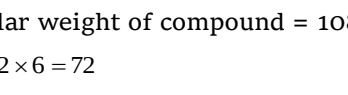
molecular formula $= C_6H_{2n+2} = C_6H_{14}$ .

**9.** (c) % of $N = \frac{1.4 \times \text{Normality of acid} \times \text{Volume of acid}}{\text{Mass of substance}}$

$= \frac{1.4 \times 1 \times 58}{1 \times 5} = 16.2$ .

**10.** (b) 

2-methyl –2, 4 – pentane diol

**11.** (b) 

4, 5-di methyl –2-hexyne

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