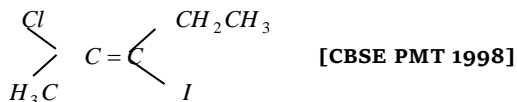


Purification, Classification and Nomenclature of Organic compounds

Self Evaluation Test -22

1. IUPAC name for the compound

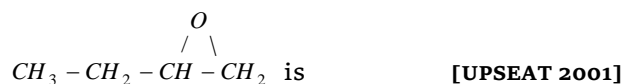


- (a) *trans* 3 iodo, 4-chloro, 3-pentene
 (b) *cis* 3 chloro, 3-iodo, 2-pentene
 (c) *trans* 2 chloro, 3-iodo, 2-pentene
 (d) *cis* 3 iodo, 4-chloro, 3-pentene

2. The IUPAC name of the following structure is
-
- $$\text{CH}_3 - \underset{\text{O}}{\underset{\parallel}{\text{C}}} - \text{CH}_2 - \text{COOH}$$
- [RPMT 1997]

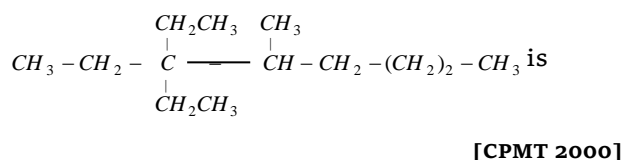
- (a) 3-ketobutanoic acid
 (b) 2-ketobutanoic acid
 (c) 4-ketobutanoic acid
 (d) 3-oxopropanoic acid

3. IUPAC name of the following compound



- (a) 1, 2-epoxy butane
 (b) Ethyl methyl ether
 (c) Keto pentanone
 (d) None of these

4. The IUPAC name of



- (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 empirical 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) $\text{C}_3\text{H}_6\text{O}_3$ (b) $\text{C}_4\text{H}_8\text{O}_4$

- (c)
- $\text{C}_6\text{H}_{12}\text{O}_6$
- (d)
- $\text{C}_5\text{H}_{10}\text{O}_5$

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) $\text{C}_2\text{H}_6\text{N}_2$ (b) $\text{C}_3\text{H}_4\text{N}$
 (c) $\text{C}_6\text{H}_8\text{N}_2$ (d) $\text{C}_9\text{H}_{12}\text{N}_3$

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
- $\frac{N}{5} \text{H}_2\text{SO}_4$
- are used to neutralize ammonia given by 1 g of organic compound. Percentage of nitrogen in the compound is

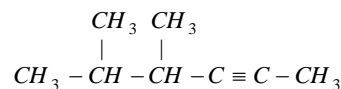
- (a) 34.3 (b) 82.7
 (c) 16.2 (d) 21.6

10. The IUPAC name for
- $\text{CH}_3\text{CHOHCH}_2 - \overset{\text{CH}_3}{\underset{\text{CH}_3}{\underset{|}{\text{C}}} - \text{OH}$
- 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



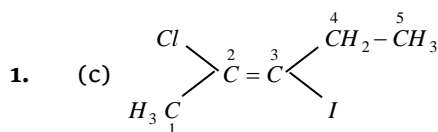
- (a) 2, 3-dimethyl-4-hexyne
 (b) 4,5-dimethyl-2-hexyne
 (c) 5-propyl-2-pentyne



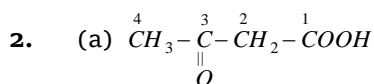
(d) 2-propyl-3-pentyne

AS Answers and Solutions

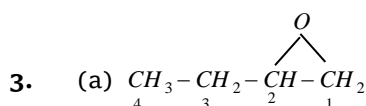
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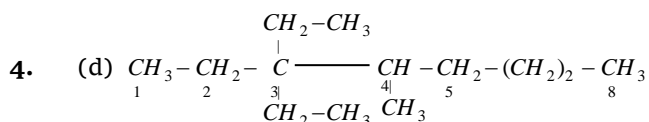
Trans 2-chloro, 3-iodo, 2-pentene



3-keto butanoic acid



1, 2 epoxy butane



3, 3 di ethyl -4-methyl octane.

5. (c) Molecular formula = (Empirical formula)_n

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

$$= (\text{CH}_2\text{O})_6 = \text{C}_6\text{H}_{12}\text{O}_6$$

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

7. (c) Molecular weight of compound = 108

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

$$\text{H}^1 \rightarrow 1 \times 8 = 8$$

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

Total molecular weight = 108

∴ Molecular formula = $\text{C}_6\text{H}_8\text{N}_2$

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

Alkanes have General formula $\text{C}_n\text{H}_{2n+2}$

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

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

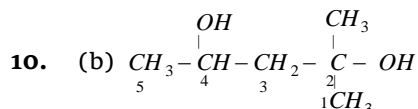
$$6n = 5.1428n + 5.1428 = 0.8572n + 5.1428$$

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

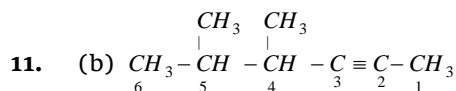
molecular formula = $\text{C}_6\text{H}_{2n+2} = \text{C}_6\text{H}_{14}$.

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

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



2-methyl -2, 4 - pentane diol



4, 5-di methyl -2-hexyne

