Class 11 Chemistry · Chapter 8: Organic Chemistry – Some Basic Principles and Techniques

Worksheet · 20 marks · about 40 minutes · based on NCERT

Name _____ Class and section _____ Date _____

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1. Wöhler's synthesis of urea, which ended the vital-force idea, started from the inorganic compound [1]

(a) ammonium carbonate (b) ammonium chloride
(c) ammonium cyanate (d) calcium cyanamide

2. A molecular model in which no bonds are shown and each atom is drawn to its van der Waals size, so that the volume the molecule occupies is seen, is the [1]

(a) framework model (b) ball-and-stick model
(c) space-filling model (d) ball-and-spring model

3. The carbon atom is the most electronegative in [1]

(a) HC≡CH (b) $H_2C{=}CH_2$
(c) $H_3C{-}CH_3$ (d) CH_4

4. Tetrahydrofuran is a five-membered ring of four CH_2 groups and one oxygen atom. It is classified as [1]

(a) a benzenoid aromatic compound (b) a heterocyclic aromatic compound
(c) an acyclic compound (d) a heterocyclic alicyclic (non-aromatic) compound

5. In the direct estimation of oxygen, 0.30 g of an organic compound finally gave 0.44 g of carbon dioxide (after the CO is oxidised by I_2O_5). The percentage of oxygen in the compound is [1]

(a) 26.7% (b) 40.0%
(c) 106.7% (d) 53.3%

6. Arrange the C–H bonds of ethane, ethene and ethyne in increasing order of bond length, and explain the order. [2]

7. A laboratory must estimate nitrogen in acetamide, nitrobenzene and pyridine. For which of these will Kjeldahl's method give a correct result? Give the reason for the others. [2]

8. A water-immiscible oil is steam-distilled at an atmospheric pressure of 760 mm and the mixture distils at 372 K, where the vapour pressure of water is 733 mm. (a) What is the vapour pressure of the oil at this temperature? (b) State the two properties of the oil that make steam distillation suitable. [2]

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9. Write the IUPAC names of: (i) $CH_3CH_2C(CH_3)_2CH_2CH(CH_3)CH_3$; (ii) $CH_3CH(Br)CH_2COOH$; (iii) $CH_3COCH_2CH_2CN$. [3]

10. (a) Compare C^+H_3 and $H_3C:^-$ in the number of electrons in the valence shell of carbon, the hybridisation of carbon and the shape. (b) Arrange the free radicals $\dot{C}H(CH_3)_2$, $\dot{C}H_3$, $\dot{C}(CH_3)_3$ and $\dot{C}H_2CH_3$ in increasing order of stability. [3]

11. For methoxyethene, $CH_2{=}CH{-}O{-}CH_3$: (a) draw its two resonance structures, showing the electron shift with curved arrows; (b) say which structure contributes more, and why; (c) state whether the $-OCH_3$ group shows a +R or −R effect here, and which carbon becomes electron rich. [3]