SBC Practice

91. Dopamine is a neurotransmitter, a molecule that serves to transmit message in the brain. The chemical formula of dopamine is $C_8H_{11}O_2N$. How many moles are there in 1 g of dopamine? **4**

(a) 0.00654
(b) 153
(c) 0.0654
(d) None of these

92. A quantity of 0.2 g of an organic compound containing, C, H and O, on combustion yielded 0.147 g CO_2 and 0.12 g water. The percentage of oxygen in it is

(a) 73.29% (b) 78.45%
(c) 83.23% (d) 89.50%

93 When a certain amount of octane, C_8H_{18}, is burnt completely, 7.04 g CO_2 is formed. What is the mass of H_2O formed, simultaneously?

(a) 1.62 g (c) 6.48 g
(c) 3.24 g (d) 2.28 g

94 The mass of sulphuric acid needed for dissolving 3 g magnesium carbonate is

(a) 3.5 g (b) 7.0 g
(c) 1.7 g (d) 17.0 g

95 D5W refers to one of the solutions used as an intravenous fluid. It is a 5% by mass solution of dextrose, $C_6H_{12}O_6$ in water. The density of D5W is 1.08 g/ml. The molarity of the solution is

(a) 0.3 M (b) 0.6 M
(c) 0.28 M (d) 0.26 M

96 A 1.50 g sample of potassium bicarbonate having 80% purity is strongly heated. Assuming the impurity to be thermally stable, the loss in weight of the sample, on heating, is

(a) 3.72 g
(b) 0.72 g
(c) 0.372 g
(d) 0.186 g

97 An aqueous solution has urea and glucose in mass ratio 3:1. If the mass ratio of water and glucose in the solution is 10:1, then the mole fraction of glucose in the solution is

(a) $\frac{1}{110}$ (b) $\frac{9}{110}$

(c) $\frac{3}{110}$ (d) $\frac{100}{110}$

98 . A sample of clay contains 50% silica and 10% water. The sample is partially dried by which it loses 8 g water. If the percentage of silica in the partially dried clay is 52, what is the percentage of water in the partially dried clay?

(a) 2.0% (b) 6.4%
(c) 10.4% (d) 2.4%

99 In an experiment, it is found that 2.0769 g of pure X produces 3.6769 g of pure X_2O_5. The number of moles of X is

(a) 0.04 (b) 0.06
(c) 0.40 (d) 0.02

Q10 A hydrocarbon C_nH_{2n} yields C_nH_{2n+2} by reduction. In this process, the molar mass of the compound is raised by 2.38%. The value of n is

(a) 8
(b) 4
(c) 6
(d) 5

Q11 An element 'A' reacts with the compound BO_3 to produce A_3O_4 and B_2O_3. The number of moles of A_3O_4 produced if 1 mole each of A and BO_3 are allowed to react, is

(a) 3 (b) 1
(c) 1/3 (d) 2/3

Q12 When x g carbon is burnt with y g oxygen in a closed vessel, no residue is left behind. Which of the following statement is correct regarding the relative amounts of oxygen and carbon?

(a) y/x must be less than 1.33
(b) y/x must be greater than 1.33
(c) y/x must be greater than 2.67
(d) y/x must lie between 1.33 and 2.67

A fuel mixture used in the early days of rocketry is composed of two liquids, hydrazine (N_2H_4) and dinitrogen tetraoxide (N_2O_4), which ignite on contact to form nitrogen gas and water vapour. The yield of N_2 gas is found to be less than its expected yield because some nitric oxide (NO) is also formed by a parallel reaction between the reactants. In an experiment 96 g N_2H_4 and 184 g N_2O_4 are taken. It is found that 18 g NO is formed.

Q13 The limiting reagent is

(a) N_2H_4
(b) N_2O_4
(c) both the reactants will be used up completely
(d) cannot predict, because the reactants are giving more than one reaction

Q14 What is the highest percentage yield of N_2 that can be expected? The theoretical yield is the quantity of N_2 formed in the absence of parallel reaction.

(a) 96.67% (b) 90%
(c) 85.7% (d) 100%

Q15 What is the total mass of water vapour formed?

(a) 262 g
(b) 140.2 g
(c) 108 g
(d) 72 g