



विद्या सर्वार्थ साधिका

ANANDALAYA
PERIODIC TEST -1
Class: XI

Subject: Chemistry
Date 01-08-2022

MM: 30
Time: 1Hr. 30 min.

General Instructions:

1. There are 15 questions in this question paper. All questions are compulsory.
2. Q. No. 1 to 6 are objective type questions and carry 1 mark each.
3. Q. No. 7 to 11 are short answer questions and carry 2 mark each.
4. Q. No. 12 to 14 are also short answer questions and carry 3 marks each.
5. Q. No. 15 is long answer question and carry 5 marks.

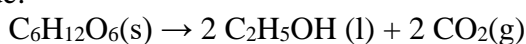
1. When a piece of aluminium is placed in a 25-mL graduated cylinder containing 10.5 mL of water, the water level rises to 13.5 mL. What is the mass of aluminium? Density of aluminium is 2.7 g/mL. (1)
2. The width, length, and height of a small box are 15.5, 27.3, and 5.4 cm, respectively. Calculate the volume of the box, using the correct number of significant figures in your answer. (1)
3. Earth's oceans contain approximately 1.36×10^9 km³ of water. Calculate the volume in litres. (1)
4. Determine the number of significant figures in the following masses. (1)
a. 0.00040230 g b. 405,000 kg
5. How many atoms of gold are there in a gold coin with a mass of 31.1 g Au? (1)
6. The characteristic odour of garlic is due to allyl sulphide [(C₃H₅)₂ S]. What is the mass of 2.50 mol of [(C₃H₅)₂ S]? Atomic mass of C= 12u, H=1u, S= 32 u respectively) (1)
7. Ammonia (NH₃) can be synthesized by the reaction: (2)
$$2\text{NO (g)} + 5\text{H}_2 \text{(g)} \rightarrow 2\text{NH}_3 \text{(g)} + \text{H}_2\text{O (g)}$$
Starting with 86.3 g of NO and 25.6 g of H₂, find the theoretical yield of ammonia in grams. (Atomic mass of N = 14 u and O = 16 u)
8. The percent by mass of calcium chloride in a solution is found to be 2.65%. If 50.0 g of calcium chloride is used, what is the mass of the solution? (2)

OR

A sample of drinking water was found to be severely contaminated with chloroform, CHCl₃, supposed to be carcinogenic in nature. The level of contamination was 15 ppm (by mass).

- (i) Express this in percent by mass.
- (ii) Determine the molality of chloroform in the water sample.

9. Fermentation is a complex chemical process of making wine by converting glucose into ethanol and carbon dioxide: (2)



Calculate the mass of ethanol produced if 500.0 grams of glucose reacts completely.

10. A metal M forms the oxide M O. Reduction of 28.6 g M O yields 25.4 g of metal M. (2)
Calculate the molar mass of M.
11. It takes 38 mL of 0.75 M NaOH solution to completely neutralize 155 mL of a sulfuric acid (2)
solution (H₂SO₄). What is the concentration of the H₂SO₄ solution?
12. If the mole fraction of Sulphuric acid (H₂SO₄) in an aqueous solution is 0.325, how much (3)
water in grams is in 100 ml of the solution?
13. The quantity of Cl⁻ in a municipal water supply is determined by titrating the sample with (3)
Ag⁺. The precipitation reaction taking place during the titration is

$$\text{Ag}^+(\text{aq}) + \text{Cl}^-(\text{aq}) \rightarrow \text{AgCl}(\text{s})$$
 a) How many grams of chloride ion are in a sample of the water if 20.2 ml of 0.100 M Ag⁺
is needed to react with all the chloride in the sample?
 b) If the sample has a mass of 10.0 g, what percentage of Cl⁻ does it contain?

OR

Calculate the molarity of an acetic acid solution if 34.57 mL of this solution are needed to
neutralize 25.19 mL of 0.1025 M sodium hydroxide



14. A solution of Glucose in water is labelled as 10 % (w/w). The density of the solution is (3)
1.20 g. mL⁻¹. Calculate molarity and molality of this solution.
15. Given the following reaction: (5)

$$\text{C}_3\text{H}_8 + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$$
 (a) Balance the above given equation.
 (b) If you start with 14.8 grams of C₃H₈ and 3.44 g of O₂, determine the limiting reagent.
 (c) Determine the number of grams of carbon dioxide produced.
 (d) Determine the number of grams of H₂O produced?
 (e) Determine the number of grams of excess reagent left.

OR

A compound contains carbon and hydrogen only. On combustion, 0.150 g of the compound
gives 0.488 g CO₂ and 0.150 g H₂O. The molar mass is found to be 52 ± 5 g/ mol. Calculate
the empirical and molecular formula of the compound.