

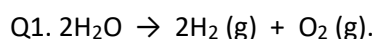
**Chemistry Test**

**Time : 45 mins**

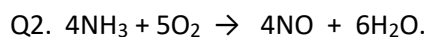
**Max Marks: 30**

General Instructions:

1. Question numbers 1 to 5 are one-mark questions. These are to be answered in one word or in one sentence.
2. Question numbers 6 to 10 are two-mark questions. These are to be answered in about 30 words each.
3. Question numbers 11 to 15 are three-mark questions. These are to be answered in about 50 words each.

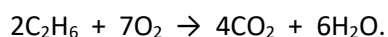


If a given experiment results in 2500 cm<sup>3</sup> of H<sub>2</sub> being produced, what volume of O<sub>2</sub> is liberated at the same time under the same conditions of temperature and pressure.



If 27 litres of reactants are consumed, what volume of Nitric oxide is produced at the same temperature and pressure.

Q3. What volume of oxygen would be required for the complete combustion of 100 litres of ethane according to the following equation.



Q4. Name the term used for molecular weight of an element expressed in grams.

Q5 State Avagadro's Law.

Q6 if 100 cm<sup>3</sup> of O<sub>2</sub> contains Y molecules how many molecules of Nitrogen will be present in 50cm<sup>3</sup> of nitrogen under the same condition of temperature and pressure.

Q7. What do you understand by the statement " vapour density of carbon dioxide is 22"?

Q8. If the number of molecules of hydrogen in a container is X , calculate the number of CO<sub>2</sub> molecules in the cylinder. Give reason for your answer.

Q9. A. What is the volume of 7.1g of chlorine at STP ? [Cl = 35.5]

B. What is the mass of 56 cm<sup>3</sup> of CO at STP ? [ C = 12 , O =16 ]

Q10. Calculate the percentage of water of crystallization in washing soda [ $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$ ]

[Na = 23 C = 12 O = 16 H = 1 ]

Q11. (i) Write the equations for the reaction of zinc with each of the following: - (a) Sodium hydroxide solution.

(b) Dilute sulphuric acid.

(c) Copper sulphate solution.

(ii) Write the balanced equations for the preparation of the following compounds (as the major product) starting from iron and using only one other substance:

(a) iron (II) chloride

(b) iron (III) chloride

(c) iron (II) sulphate

(d) iron (II) sulphide.

(iii) Write balanced equation for – Al powder when warmed with hot and concentrated caustic soda solution.

(iv) To protect iron from rusting it is coated with a thin layer of zinc. Name the process. (v) Which particular property of cast iron makes it unsuitable for the construction of bridges.

.Q12. (i) What is an alloy?

(ii) An alloy usually has some property which makes it particularly useful. What is the special property of: (a) Duralumin (b) Type metal

(iii) Which metal is added to steel to make stainless steel.

Q13. (i) For each substance listed below, explain its significance in the extraction of aluminium:

(a) Bauxite (b) Sodium hydroxide (c) Cryolite (d) Graphite.

(ii) Relating to the extraction of aluminium by electrolysis:

(a) Give the equation for the reaction which takes place at the cathode.

(b) Explain why it is necessary to renew the anode periodically.

(iii) In order to obtain aluminium, the following inputs are required: Bauxite, sodium hydroxide and graphite. The aluminium compound in bauxite is aluminium oxide and the main impurity is iron (III) oxide. Aluminium is obtained by the electrolysis of aluminium oxide dissolved in cryolite.

(1) When bauxite is treated with sodium hydroxide solution what happens to the

(a) aluminium oxide (b) iron (III) oxide.

(2) Name the process used for the purification of bauxite.

(3) Write the equation for the action of heat on aluminium hydroxide.

Q14. Calculate the percentage of 55% pure sample of calcium carbonate [Ca = 40, C = 12, O = 16].

Q15. A hydrocarbon has the following percentage composition ---hydrogen 2.2 % carbon 26.6% and oxygen 71.2.%. Calculate the empirical formula for the compound. If its molecular weight is 90, find its molecular formula. [ H = 1, C = 12 , O =16]