

ICSE Chemistry Model Paper 14

Answers to this Paper must be written on the paper provided separately.

You will not be allowed to write during the first 15 minutes.

This time is to be spent in reading the Question Paper.

The time given at the head of this paper is the time allowed for writing the answers.

Section I is compulsory. Attempt any four questions from Section II.

The intended marks for questions or parts of questions are given in brackets [].

SECTION I (40 Marks)

Attempt all questions from this Section

Question 1

- Chlorine is the subject of the following questions:
- What is the atomicity?
- Name the compounds formed when chlorine react with water.
- Chlorine reacts with white phosphorus forming phosphorus tri-chloride and phosphorus pentachloride.
- Write balanced equation for the formation of each of these compounds.

(b) Answer the following questions, relating your answer only to salts in the list given below:
Anhydrous calcium chloride, copper sulphate-5-water, sodium carbonate-10-water.

- Which compound is efflorescent ?
- Which compound is blue in colour ?
- Which compound is deliquescent ?
- What would be seen in mixing a solution of calcium chloride with a solution of sodium carbonate ?
- Write a balanced equation for the reaction occurring when a solution of calcium chloride is mixed with a solution of sodium carbonate.

Q.1(c) In this question you are required to supply the word (or words) that will make each sentence in to a correct statement which to be written down in full.

Example: sodium reacts with chlorine to form sodium chloride.

Answer: Molten sodium reacts with chloride to form sodium chloride.

- The electrolysis of lead bromide liberates lead and bromine.
- Copper sulphate crystals are dehydrated by sulphuric acid.
- Calcium nitrate reacts with sodium sulphate to form calcium sulphate. (same word is required in two places.)
- Crystals of sulphur are obtained when a solution of sulphur in carbon disulphide is allowed to evaporate.

Q.1(d) If a crop of wheat removes 20 kg of nitrogen per hectare of soil, what mass of the fertilizer calcium nitrate $\text{Ca}(\text{NO}_3)_2$ would be required to replace the nitrogen in a 10-hectare field ? (N = 14; O = 16; Ca = 40. Answer to the nearest kg.)

- A vessel contains N molecules of oxygen at a certain temperature and pressure. How many molecules of sulphur dioxide can the vessel accommodate at the same temperature and pressure ?
- Each of two flasks contains 2.0 g of gas at the same temperature and pressure. One flask contain oxygen and the other hydrogen.

1. Which sample contains the greater number of molecules ?

2. If the hydrogen sample contains N molecules, how many molecules are present in the oxygen sample ? (H = 1; O = 16.)

(iii) A gas sample occupies 4 litres at 27°C and P atmospheric pressure. What would be its volume at 327°C and 2P atmospheric pressure ?

Q.1(f) Describe, in each case, one chemical test that would enable you to distinguish between the following pairs of chemicals. Describe what happens with each chemical or state no 'visible reaction'.

- (i) sodium chloride solution and sodium nitrate solution ;
- (ii) sodium sulphate solution and sodium chloride solution ;
- (iii) calcium nitrate solution and zinc nitrate solution;

Q.1(g) Write balanced equations for each of the following reactions :

- (i) Magnesium heated in nitrogen ;
- (ii) Action of heat on sodium nitrate ;
- (iii) Action of heat on copper nitrate ;
- (iv) Zinc and dilute sulphuric acid ;
- (v) Ethene and hydrogen ;
- (vi) Nitrogen monoxide and oxygen.