9.2 PAPER 2 (233/2)

From the survey conducted, it was found that questions 1, 3 and 6 were the best done in the paper. Question 1 was on chlorine and mole concept. Question 3 was on sulphur and mole concept. The good performance would indicate that the mole which used to be a problem is now fairly understood. Question 6 was on organic chemistry. Once more, the good performance is an indication that organic chemistry is no longer a problem to the majority of students.

Questions 4 and 7 were the worst done in that order. These two questions are discussed below.

Question 4

(a) At 25°C, 50 g of potassium nitrate were added to 100 g of water to make a saturated solution.

What is meant by a saturated solution? (1 mark)

(b) The table below gives the solubilities of potassium nitrate at different temperatures.

Temperature (°C)	12	20	28	36	44	52
Solubility g/100 g water	22	31	42	55	70	90

(i) Plot a graph of the solubility of potassium nitrate (vertical axis) against temperature. (3 marks)

ii) Using the graph

I determine the solubility of potassium nitrate at 15°C. (1 mark)

II determine the mass of potassium nitrate that remained undissolved given that 80 g of potassium nitrate were added to 100 cm^3 of water and warmed to 40°C. (2 marks)

(c) Determine the molar concentration of potassium nitrate at 15°C.
(Assume there is no change in density of water at this temperature).
(K = 39.0; N = 14.0; 0 = 16.0). (3 marks)

In this question, the candidates were required to:

- Define solubility with particular reference to potassium nitrate.
- Use data on solubility to plot a graph.