

# CHEMISTRY

## SUBJECT 9189

### PAPER 5

#### GENERAL COMMENT

There was a general improvement in the quality of the answers. The paper was fairly attempted by about 60% of the candidates. The level of practical practice is evidently on the increase.

#### Preparation and conduction of the practical

About 80% of the supervision competently prepared the reagents that gave a close range of litres. This was very good and they are encouraged to keep up such professionalism. However, there are some supervisors who failed to co-operate fully. They never filled in the answers completely. Some chose to only give a titre without final and initial burette readings, some failed to give the candidates in each of the sessions they supervised. In such cases, candidates could not be fairly assessed. The supervisors are therefore encouraged to fully comply with the examiner in order to disadvantage their candidates.

#### COMMENTS ON INDIVIDUAL QUESTIONS

##### Question 1

##### (a) Dilution of FA1

Both the supervisors and the candidates interpreted "taking between" as meaning median, that is, 45,00cm<sup>3</sup> hence almost all centres surprisingly used the same volume. The examiner expected the use of any volume within the range excluding the limits.

Almost all zero started and ended at 45,00 cm<sup>3</sup>. However, the variations in their subsequent titres showed that the candidates may have either lied or had difficulties in using either a burette or a volumetric flask hence penalised.

- (b) Good candidates drew the titration table correctly. Weaker candidates lost marks by leaving units or by starting with the initial burette readings at the top followed by final burette readings below it. Although 70% of the candidates scored high points there are a good number who lost marks by giving unrealistic burette readings of either above 50cm<sup>3</sup> or values like 20.11cm<sup>3</sup>. The mark for ticking the most precise titres, calculation of average, to an either rounded up or down values was commonly lost.

- (c) 80% of the candidates calculated the moles as expected, i.e.  $\frac{\text{titre}}{1000} \times \text{conc}$
- (e) Most candidates did very well.
- (f) Weak candidates found it difficult to deduce the dilution factor and lost marks. The expected answers were:

$$\text{ans(e)} \times \frac{250}{1000} \times \frac{1000}{\text{vol of FA1}} \text{ OR } \text{ans(e)} \times \frac{250}{\text{vol FA1 diluted}} \text{ OR } \text{ans(c)} \times \frac{250}{25} \times \frac{1000}{\text{vol of FA1}}$$

- (g) and (h) were fairly attempted by most candidates.

## Question 2

- (a) Most candidates failed to pick the six most important apparatus required because they could not come up with a method, i.e. water tap, boiling tube, thermometer, beaker and stop watch.
- (b) The design was poorly done by 90% of the candidates. It showed that there was poor preparation in design. Most candidates failed to utilize the hint that FA4 melted below 100°C, hence use of a water bath was the not appropriate. Most designs could not score much because they were too general. The examiner expected candidates to specify and justify quantities used, e.g. place about 2cm depth of FA4 into a boiling tube just to cover the thermometer bulb, OR half fill the 100 cm<sup>3</sup> beaker with tape water so that the boiling tube can be immersed without overflowing.

A reasonable time interval of at least five seconds and at most 60 seconds was expected in collecting temperature changes. The resultant graph to be drawn was also expected to be specified. The examiner had expected the candidates to either heat FA4 by water bath to melting or recording the temperature or heating to melting then recording the cooling trend.

- (c) Candidates were expected to mark reference to the results and not just copy the stem of the question.