

CHEMISTRY
SUBJECT 9189

PAPER 5

GENERAL COMMENTS

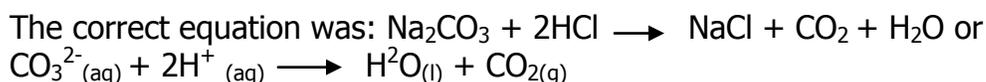
Generally candidates did well in this paper showing that they may have been adequately prepared by their centres though a few centres did not do well. It was encouraging to note that almost all the candidates were able to complete the paper as previously some candidates failed to do so.

QUESTION 1

- (a) Most candidates were able to create a titration table of results, an obvious area where candidates were always provided in the past. Very weak candidates, however, were unable to produce a correct tabulation of results with units, correct order, etc. Careless candidates did not record their burette readings to two decimal and did not show at least two FA2 volumes within 0,1 cm³ range as expected by the question. It is important for teachers and tutors to emphasise the need for a calculated average titre of at least two FA2 values which are within 0,1 cm³. Accuracy marks were awarded by comparing the supervisor's average titre to that of the candidate, since this was a direct titration. The marks ranged from 12 marks for a difference of up to 0,08 falling to zero for a difference of greater than 0,96. For candidates to be awarded marks fairly and accurately, it is important for supervisors to perform the titration experiment at the same time and conditions as the candidates not before or after the examination session.
- (b) Almost all the candidates got this calculation correct.

QUESTION 1 (c)

- (i) Candidates did not have any difficulty in writing a balanced equation of reaction. Only a few candidates wrote the following incorrect equation.



- (ii) Quite a number of candidates were able to divide the number of moles of (b) by half to get the number of moles of FA1 but did not proceed to find the number of moles of FA1 in 1dm^3 as required by the question.
- (d) This was a giveaway question for all candidates serve for a very few careless ones.
- (e) Most candidates performed very badly on this Assessment of Planning Skills question. A majority of those who attempted it thought that it was an Energetic question where they were supposed to calculate the enthalpy change of the reaction by mixing the two reagents and noting the temperature change just one. The question was actually a titration question where the 'indicator' was a thermometer. Hydrochloric acid was supposed to be added into a plastic cup.

A series of known volumes of Na_2CO_3 added until the temperature was constant with temperature being recorded after each addition. A plot of temperature against volume of Na_2CO_3 would be done and the volume of Na_2CO_3 at maximum temperature taken, this was then used to calculate the concentration of Na_2CO_3 since the amount of hydrochloric acid would have been calculated using the given concentration and the known volume of hydrochloric acid added into the plastic cup.

QUESTION 2

- (a) Some candidates were unable to give the correct colour observations on mixing the reagents. The correct descriptions for the colours for the resulting solutions were blood red or brick red not 'brown'
- (b) Most candidates did very well on this part but only a few careless candidates stated that the solution(s) became 'whole' or clear instead of colourless. It is important for teachers to emphasise that the word 'colourless' and clear are not synonymous.

QUESTION 2 (c)

- (i) This was a classical example of an application of the theory on equilibrium. Quite a number of candidates got this correct and went on to explain the effects of increasing reactants on the equilibrium.

- (ii) Poor candidates stated that NaF was a catalyst yet it was evident from the experimental results that it changed the solution to colourless. The correct answer was that NaF was removing Fe^{3+} from the solution or one of the ions the solution and the effect was that the equilibrium would shift to the left or $[\text{FeSCN}]^{3+}$ dissociated hence it became colourless.