KAPSABET HIGH SCHOOL

233/3 (*Kenya Certificate of Secondary Education*) **Paper 3**

INTERNAL MOCK EXAM

CHEMISTRY

(PRACTICAL)

Dec. 2020– 2 ¼ Hours

MARKING SCHEME

Instructions to candidates

a) *Write your Name, Index, Admission number and stream in the spaces provided above.*
b) *Sign and write the examination date on the spaces provided above.*
c) *Answer all the questions in the spaces provided.*
d) *You are not allowed to start working with the apparatus for the first 15 minutes of the 2 ¼ hours. Allowed for this paper. This time is to enable you to read the question paper and make sure you have all the apparatus and the chemicals you may need.*
e) *All workings **must** be clearly shown where necessary.*
f) *KNEC mathematical tables and non-programmable silent electronic calculators may be used.*
g) Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.
h) Candidates must answer the questions in English.

Question 1

Procedure A

Table 1……5mks distributed as follows

A: COMPLETE TABLE ……1mk

Conditions

i. Complete table with 3 titrations done ……1mk
ii. Incomplete table with 2 titrations done……..$^1/_2$ mk
iii. Incomplete table with 1 titration done ……0mk

PENALTIES

i. Wrong arithmetic (subtraction)
ii. Inverted table
iii. Burette reading >50cm3
iv. Unrealistic titre values (less than 1cm3 or hundreds)

NB Penalise $^1/_2$mk each to a maximum of $^1/_2$mk i.e. penalise ONCE

B. USE OF DECIMALS ……1mk (tied to 1st and 2nd rows only.

CONDITIONS AND PENALTIES

i. Accept 1 or two decimal places used consistently otherwise penalise fully (i.e. award 0marks)
ii. If two decimals places are used the 2nd decimal place must be a ‘o’ or a ‘5’, otherwise penalise fully.
iii. Accept INCONSISTENCY in the use of zeros as initial burette readings e.g. 0,0.0,0.00

C. ACCURACY ……1mk

Compare the candidates correct titre values with the school value (s.v) i.e. the teachers correct average titre and award as follows.

i. If at least one is within ±0.1 of s.v award 1mk
ii. If none is within ±0.1 of s.v but at least one is within ±0.2 of s.v award ….$^1/_2$mk
iii. If no value is within ±0.2 of s.v award ….0mk
iv. If there was wrong arithmetic or no subtraction done in the table compare correctly worked out value (s) with s.v and award accordingly.

D PRINCIPLES OF AVERAGING……..1MK

CONDITIONS

i. 3 consistent titrations done and averaged ……1mk
ii. 3 done but 2 are consistent and averaged …….1mk
iii. Only 2 done are consistent and averaged ……..1mk
iv. 3 done, are inconsistent and averaged ……..0mk
v. 2 done are inconsistent and averaged ……0mk
vi. 3 consistent done but only 2 averaged …….0mk
vii. Only 2 done are inconsistent and averaged ……0mk
viii. Only one titration done ……..0mk

PENALTIES

i. Penalise $^1/_2$mk for wrong arithmetic if error is outside 2 units in the 2nd decimal place.
ii. Penalise $^1/_2$mk for no working shown even if answer is correct.
iii. Correct answer from wrong working – 0

e.g. $\frac{20+20+20}{2} = 20$, $20+20+20=\frac{60}{3}=20$

NB.

a) Accept rounding off/truncation of answer to 2d.places e.g. 21.666 as 21.66 or 21.67 otherwise penalise 1/2mk for rounding off to 1d.place or whole number.
b) Accept answer if it works out exactly to 1 place or a whole number.

E. FINAL ACCURACY ……1mk (Tied to correct average titre)

Compare the candidate's correct average titre with the school value (s.v) and award as follows;

i. If there are two possible correct values for average titre from the candidate's tables use the one closest to the s.v and credit accordingly.
Table 1 post marks as

ii. Na2CO3 = 46 + 12 + 48 = 106

Conc. = $\frac{8}{106}$ = 0.075

Or

Conc. = $\frac{8}{106}$

=0.075

NOTES

i. Answer tied to correct arithmetic, accept reading to 3rd or 4th decimal place if not exact.
ii. Accept arithmetic error if within ± 2 units in the 3rd decimal place, otherwise penalise $^1/_2$mk.
iii. Units may not be shown, but if shown must be correct, otherwise penalise $^1/_2$mk for wrong units.
iv. If a candidate works beyond the expected answer penalise FULLY.

b). (iii) mole of $Na_2 Co_3$ = $\frac{pipette\ x\ 0.075}{1000}$

= ans (I)

Moles of H_2SO_4m titre = ans (I) (:)