FORM 2 TERM 1 2022 CHEMISTRY MARKING SCHEME

1. i) Pure substance which cannot be split into simpler substance by chemical means (1mk)

   ii) Charged atom(s) (1mk)

2. i) a) round bottomed flask – heating substances (½mk)

   b) Measuring cylinder/Measuring volume of liquids (½mk)

   c) Spatula/Scooping solids/chemicals from containers (½mk)

   ii) Burette/syringe/beaker (1mk any one correct)

   (Reject apparatus that can't measure accurate volumes)

3. - Easy to clean

   - Transport

   - Unreactive

   - Modelled into many shapes

   - Recyclable (Any 4 correct 1mk each)

4. a) Atoms of same element having different number of neutrons hence different mass number (1mk)

   b) Energy required to remove an electron from an atom to form an ion in gaseous state (1mk)

c) Energy required to capture/gain an electron by an atom to form an ion in gaseous state

5. $Zn(s) + 2HCl(aq) \longrightarrow ZnCl_2(aq) + H_2(g)$

   Wrong formula = no mark

   Symbols ½

   Balance ½

   b) Upward delivery/downward displacement of air (1mk)

It is less denser than air (1mk)

c) R – Conc. Sulphuric (VI) acid (1mk)

For drying hydrogen (1mk)

d) Reaction would be explosive/dangerous because sodium is very reactive (1mk)

e)   -   Manufacture of hydrochloric acid

-   Manufacture of ammonia

-   Hydrogenation of oils to form fats

-   Weather balloons (rej. Air balloon)

-   In oxy-hydrogen flame for welding

-   As rocket fuel

-   As fuel cells (Any 2 correct, a mark each)

6. a) A_1 (1mk)

b) From A_1 (1mk)

7. I – does not have definite Mpt and Bpt (1mk)

8. a) Oxygen (1mk)

b) Introduce a glowing splint into the gas (1mk)

/It will relight (1mk)

9. i) P: 20 (1mk)

Q: 9 (1mk)

ii) R   (1mk)

iii) P,T,U All 3 = 2mk/2 = 1mk/Otherwise no mark

iv) P, R, T, U, V (Any 3 = 1mk)

v) Form ions by gaining electrons ½mk/ Since it is a non-metal/resulting in electron-electron ½ mk repulsion

10. a) Chemical change 1mk/new substance formed

b) Oxygen = $\left(\dfrac{Y - X}{Y}\right)$ x 100   (2mks)

1mk for x – y

1mk for %age

c) No change 1mk/ since % of oxygen is the same OR Vol. of O_2 is fixed 1mk

d) - New substance formed

   - Mass increases

   - Heat change involved (Any 2 correct = 1mk each)

11. a)i) $Fe_2O_{3(s)} + 3CO_{(g)} \longrightarrow 2Fe_{(s)} + 3CO_2$ (1mk)

ii) Oxidising agent – CO (1mk)

b) - Extraction of metals e.g. Iron 1mk each

   - Purification of metals e.g. Iron

      (Any other correct)

12. a) Sublimes without leaving a liquid (1mk)

b) - Leaves no liquid to spoil cream

   - Takes longer to sublime

   - Has a wider sublimation temp.

   - Extraction of Zinc metal (any correct = 1mk)

c) Iodine Iron III chloride naphthalene (1mk)

13. a) $\left(\dfrac{2 \times 33}{3}\right) + \left(\dfrac{1 \times 30}{3}\right)$ Total 4mks

b) i) 30 + 35 = 65 (1mk)

ii) A^{2+} or +2   (1mk)

c) $\left(\dfrac{92.2 \times 28}{100}\right)$ + $\left(\dfrac{4.7 \times 29}{100}\right)$ + $\left(\dfrac{3.1 \times 30}{100}\right)$ = R.A.M

25.816 + 1.363 + 0.93 = 28.11

Show percentages = 2mks

Work outs = 1mk

Ans. = 1mk

d) Y / has 7 outermost electrons showing it is in group 7/a halogen (1mk)

e) X and Z (1mk)

f) NM_2 (1mk)

14.   a) - Pale blue zone (1mk)

- Green blue zone (1mk)

- Almost colourless zone (1mk)

b) A   1mk

c) It is very hot/hotter than luminous does not produce soot (Any correct 1mk each)

d) i) Luminous flame

ii) When air hole is closed

e)i) Any substance, natural or manufactured which when used alters body functions

(1mk)

ii) Prescription – giving written instructions by a qualified medical officer giving details on type

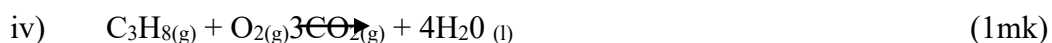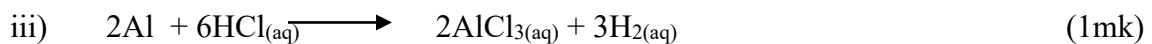of drugs and how they should be used (1mk)

iii) Dosage – amount of drug/medicine to be taken at a time or regularly on a period of time

(1mk)

iv) Drug abuse – Use of a drug for a use other than what it is meant for/under prescription or

over prescription (1mk)

15.

i) $2Mg_{(s)} + O_{2(g)} \longrightarrow 2MgO_{(s)}$ (1mk)

ii) $3Mg_{(s)} + N_{2(g)} \longrightarrow Mg_3N_{2(s)}$ (1mk)

iii) $2Al + 6HCl_{(aq)} \longrightarrow 2AlCl_{3(aq)} + 3H_{2(aq)}$ (1mk)

iv) $C_3H_{8(g)} + O_{2(g)} 3CO_{2(g)} + 4H_2O_{(l)}$ (1mk)

16.   i) Before – blue ½ mk/ after – white ½ mk

ii) Avoid boiling tube cracking due to condensed water flowing back (1mk)

iii) Test its Bpt/Mpt/density (any 1 correct = 1mk)

vi)   Any hydrated slat (1mk)

17.   i) to generate steam for – driving air ½ mk from apparatus; react with

Magnesium ½ mk

ii) Remove layer of Magnesium oxide to allow Magnesium to combine with steam (1mk)

b) Hydrogen (1mk)

c) $Mg_{(s)} + H_2O_{(g)}$ $MgO_{(s)} + H_{2(g)}$ (1mk)

 d) Over water method (1mk)