**MID TERM TWO EXAMS**

**CHEMISTRY FORM 4.**

**MARKING SCHEME 2022**

1. (a) **Mass number√/sum of number of protons and neutrons in an atom of element**

(b) (i) **NP2 √**

(ii) **P, R, √ S√**

(iii) **P. √**

**P is nonmetal√½ while R and S are metals.**

**Metal come first before non-metals across a period√½**

(iv) **P and U√**

(c) i) I **Ionic/electrovalent. √**

II **Metallic√**

(ii) **IV. √**

**Is made of simple molecular structure√ with low boiling/melting point and a poor electrical conductor.**

|  |  |
| --- | --- |
| No change in mass | change in mass |

2. a)

(b) (i)

Smooth curve – 1mk

Correct plots – 7 points -1mk

5 or 6 points – ½mk

Below 5 points – 0mk

Scale – Consistent scale on both axis – ½mk

-Labeling of axis – ½mk

(Penalize 1mk if the axis are inverted)

ii) I. **From correctly plotted graph t ½ = 20 minutes√**

II.  **From correctly plotted graph at 70minutes = 9%√**

**=> Original mass = 0.16 x 100 √ = 1.7778 g**

**9**

c) **Treatment of cancer√**

**Detection of uptake of iodine in kidneys√**

**Regulation of heart pace maker√**

**Sterilization of surgical instruments√**

**3.** a) CaCO3(s) + 2HCl(aq) CaCl2(aq)  + H2O(l) + CO2(g)1

b) The carbon (IV) oxide formed escaped into the atmosphere1

c) To prevent acid from spraying out1

d) In the graph paper (***3mks)***

e) 1mk for curve 35°C

f) - The reaction rate would increase½

- Marble powder offers a larger surface area than chips, which causes the rate of reaction to increase1

g) There would be formation of insoluble calcium sulphate that would coat calcium carbonate (Marble chips) stopping the reaction1



**5.** a) Type of reaction: Dehydration½

Reagent : Concentrated Sulphuric (VI) acid ½

Condition: 170oC - 180°C (single value in that range) ½

b) Mg(s) + 2CH3COOH(aq) (CH3COOH)2Mg(aq) + H2(g)1

c) V - Butylethanoate1

CH3COOH(aq) + CH3CH2CH2CH2OH(l)  CH3COOCH2CH2CH2CH3(aq) + H2O(l)1

d) Reagent: Soda lime½

Condition: Heat½

e) Name: Tetrachloromethane/ carbon tetrachloride ½

Structure:

½

f) Name: Polyethene/polythene½

Type of reaction: Addition reaction/Addition polymerization1

g) Molecular mass of -CH2 - CH2 - = 14 + 14

= 28½

n = 44800½ = 1600