CHEMISTRY FORM TWO
MARKING SCHEME.

SECTION A: 15 Marks

1.

i.	ii.	iii.	iv.	v.	vi.	vii.	viii.	ix.	x.
D	D	A	D	D	A	C	B	A	B

(@ 01= 10 Mark)

2.

i.	ii.	iii.	iv.	v.
A	B	E	D	C

(@ 01=05Mark)

SECTION B: 70 Marks

3. (a) i) Layer separation   **01 Marks**

ii) It form immiscible liquid, kerosene is less dense than water, the mixture form distinctive layer. **(01 marks)**

iii) By using separating funnel, kerosene as less dense remain at the top of the separating funnel and water as denser settle at the bottom, then the tap of separating funnel is opened slowly and the liquid at the bottom (water) drain away into the empty beaker. When all liquid drained in the beaker, close the tap and u will get two components. **(01 marks)**

(b) i) Iodine and ammonium chloride **(@0.5= 01 marks)**

ii) Due to low difference in polarity between the mobile and stationary phase. **(01 marks)**

(c) i) Remove any tight clothing from the victim.

ii) Lay down the victim on his or her back

iii) Raise the legs of the victim to increase the flow of blood to the brain.

iv) Ensure that the victim is in an open place with plenty of air.

v) Take a victim to nearby health care immediately if the victim does not recover for few minutes.
            (@01=05 marks)

 4. (a) Oxygen gas. **(01 mark)**

(b) i) Put about 5g of manganese (iv) oxide into the bottomed flask

ii) Fill the trough with water, put a beehive shelf in it, fill a gas jar with water and invert it over a beehive shelf.

iii) Connect the delivery tube through the shelf in the trough, ensure that the water in the gas jar has no bubbles.

iv) Put about 80 cm of hydrogen peroxide in the thistle funnel.

v) Open the tap of the thistle funnel to allow hydrogen peroxide to follow manganese (iv) oxide, allow first few bubbles of the gas to escape then collect the gas through delivery tube into the invented gas jar. **(@01=05 marks)**

(c) To speed up the rate of chemical reaction. **(01 mark)**

(d) i) Explosion for example decomposition of potassium chlorate. **(01 mark)**

ii) High energy requirement, for example electrolysis of water. **(01 mark)**

iii) Health problem for example decomposition of mercury oxide may irritates eyes. **(01mark)**

5.(a) Is a statement that explains what to do or not to do in the laboratory. **(1.5 mark)**

  (b) i) Read the instruction carefully before you start the experiment.

    ii) Do not interchange the labels.

    iii) Do not use dirty, cracked or broken apparatus.

    iv) If you do not understand something ask your teacher or laboratory technician before proceeding.

        (@01=04marks)

  (c)   Name, Symbols and Meaning

NAME AND SYMBOL (@ 01=03 Marks)	MEANING (0.5 @ Mark=1.5 Marks)
i. Toxic 	This substance is dangerous and can cause death.
ii. Corrosive 	This substance corrodes or burn surfaces as well as human body skin.
iii. Explosive 	This substance explodes or blast easily

                                    (Total = 4.5 Marks)

6 (a) i) Water (H_2O) **(01 mark)**
    ii) – By using unhydrous white copper (ii) sulphate which turn to blue under presence of liquid L
By using blue cobalt (ii) chloride, which turn to pink under presence of liquid L.
    (@01=02 marks)
iii) – It is universal solvent, it help to dissolve more substance.
It has high surface tension, help to prevent water loose from a substance.
It has high specific heat capacity, help to absorb heat before begins to get heat.
Only two points @01=02 marks
iv) - Used in agriculture activities for irrigation
Used in cooling machine in industries
Used in transportation
Used in purification of metal and mining activities.
 Only two points@01=02 marks

(b) Difference between metal and non-metal.

SODIUM METAL	CHLORINE
i).Ionize by losing electron	Ionize by gaining electron
ii). Has high density, melting and boiling point.	Has low density, melting and boiling point.
iii). Good conductor of electricity and heat	Bad conductor of electricity and heat
iv) It is ductile and malleable	Not ductile and malleable

   Only three points @01=03 marks)

7(a) i) Down displacement of water- This method is used for collecting gases which are insoluble or only slightly soluble in water, as not dissolve in water it is less dense than water it can rise to the top of the gas jar and be collected there. Example; hydrogen and oxygen gas. **(01mark)**

   ii) Upward delivery method- This method is used to collect gases, which are less dense than air. Example; hydrogen and chlorine gas **(01 mark)**

   iii) Downward delivery method- This method is used to collect gases that are heavier than air or denser than air. Eg Ammonia gas.**(01mark)**

(b) i) Hydrogen gas **(0.5 mark)**

   ii) Produce "pop sound" when burn in air. **(0.5 mark)**

(c)

   (02 marks)

   (i) Zn+ dil 2Hcl→ Zncl$_2$ **(01 mark)**
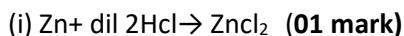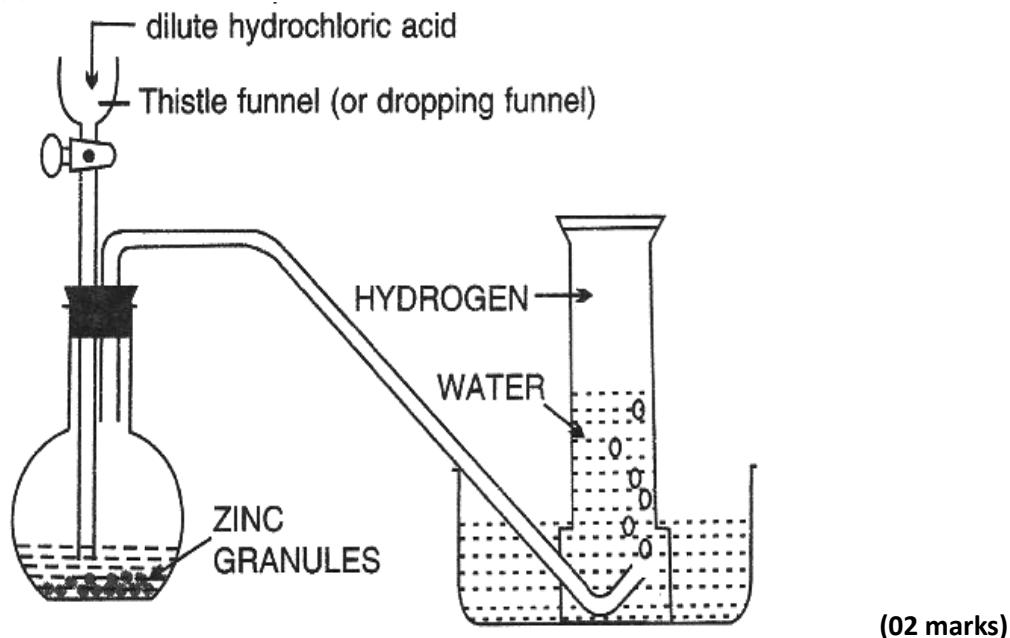
   (ii) – **Storage,** hydrogen is the lightest gas so escape easily into air this make difficult in storage using simple containers **(01 mark)**

   -**Safety,** hydrogen is high flammable so it can explode into fire any time when stored. **(01 mark)**

   -**Production,** hydrogen does not react with other element at room temperature so its production in large scale is expensive, as it requires high energy and advanced equipment. **(01 mark)**

8 (a) Is the zone of burning gases that produce heat and light. **(01 mark)**

   (b) i) It produce flame when air hole is completely opened. **(02 mark)**

   ii) It is very hot flame and do not form soot. **(02 mark)**

(c)

Boiling	Evaporation
i. Occur at one particular temperature	Occur at any temperature
ii.It occur both inside and on surface of the liquid	Occur at the surface of the liquid
iii.Take place faster	Take place slowly
iv.Bubbles are formred	Bubbles are not necessarily formed
v.Has no cooling effect	Has cooling effect

(@01=05 marks)

9 (a)i) Class F **(01mark)**

ii) Wet chemical extinguisher **(01 mark)**

iii) Water, because the burning materials are less dense than water, so when poured will float over water and spread the fire further more. **(01 mark)**

(b) i) Keep a reasonable distance from the fire as it may change direction (such as 3 metres)

ii) Never use a portable extinguisher on people, instead use fire blanket.

iii) Do not test a portable extinguisher to see if it work, it may leak and later fail to work during an emergence.

iv) Do not return a used portable extinguisher to the wall.

v) When fire get out of control, abandon it and notify the nearest fire fighting team

(@01=05 marks)

(c) i).It is chemical change because new substance is formed.

ii) It is irreversible, and heat or energy may be given out during formation.

(@01= 02 marks)

SECTION C (15 MARKS)

10 (a) Biogas plant is an aerobic digester where biogas is produced by fermentation of organic matter (Animal and plants residues) **(01 mark)**

(b) Components includes (i) Digester tank

(ii) Inlet and outlet

(iii) Delivery and Gas holder tank.

(@0.5= 1.5 marks)

Raw materials includes (i) Animal dungs

(ii) Plant residues

(iii) Sewage waste.   **(@0.5=1.5 marks)**

(c) i) Equal amount of biomass and water are mixed in mixing tank to for slurry, the formed slurry is fed into the digester tank through inlet chamber.

ii) The slurry is left for almost two months for anaerobic respiration; the bacteria are used to decompose to form biogas.

iii) As more biogas is start to be collected, the pressure exerted by the biogas forces the slurry into the outlet pipe.

iv) From the outlet chamber flow to the overflow tank and is manually removed and used as manure. **(@01= 04 marks)**

(d) Data given;

Volume of water used (Vw)= 25 litres= 0.025 m^3

Heat value of diesel (E) =43400KJ/Kg

Density of water (Sw)= 1000kg/m^3

Specific heat capacity of water (Cw) = 4.18Kj/kg/K

Initial temperature of water=15 ∘C

Final temperature of water= 95 ∘C   **(01 mark)**

Density of diesel =810kg/m^3

Required volume of diesel?

From ; Heat value (E) = $\underline{Sw \times Vw \times Cw \times \Delta C}$ **(01 mark)**

Mass of fuel (M)

Mass of fuel = $\underline{Sw \times Vw \times Cw \times \Delta C}$

Heat value   **(01 mark)**

$\underline{1000 \times 0.025 \times 4.18\ (95-15)}$ **(01mark)**

43400

Mass of fuel = 0.192 kg.   **(01 mark)**

But density = $\underline{Mass\ of\ diesel}$

Volume of diesel   **(01 mark)**

Volume of diesel = 0.192 ÷ 810 = 0.000237

Therefore the volume of diesel = 0.000237m^3 **(01 mark)**