Grade 11

Time : 1 Hour

Name :-...

## Part I

- **Underline the correct answer.**

01. Which of the following carbohydrate is most abundant in bee honey?.
    1) Maltose　　　　　2) Sucrose　　　　　3) Glucose　　　　　4) Starch

02. What is the object which emits infrared rays?
    1) Remote controller　　2) Mercury vapour lamp　　3) Micro wave oven　　4) Radio

03. What mass of Sodium Hydroxide is needed to make 500 ml of a 0.5 moldm^{-3} Sodium Hydroxide solutaion?
    1) 40 g　　　　　2) 80 g　　　　　3) 20 g　　　　　4) 10 g

04. What is the cell organelle which produce and transport lipids?
    1) Rybosome　　2) Smooth endoplasmic reticulum　　3) Nucleus　　4) Golgi complex

05. Progesterone level of a female rises up in
    1) Menstrual phase　　2) Proliferation phase　　3) Secretory phase　　4) Follicular phase

06. Following are some features of a specific cell
    　　a) Being Involuntary　　b) Uni nucleated　　c) Intercalated disks are present between cells
    the tissue which is made up of these cells is,
    1) Nervous tissue　　　　　　　　　2) Cardiac muscle tissue
    3) Skeletal muscle tissue　　　　　　4) Smooth muscle tissue

07. The behaviour of a light ray is given beside. What is needed to be kept in the place X to get that consequence.
    1) Convex lens　　　　　2) Convex mirror
    3) Concave lens　　　　　4) Concave mirror
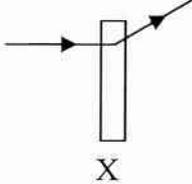
    X

08. What is the instance where frictional force is applicable in day to day life?
    1) Playing carom　　　　　　　　2) Workout machine parts
    3) Working a sewing machine　　　4) Lighting a match stick

09. Gymnosperms are,
    1) Enclosed seed plants　　　　2) Naked seed plants
    3) Flowering plants　　　　　　4) Non seed bearing plants

10. What is the exothermic reaction, out of the chemical reactions mentioned below?
    1) Dissolving glucose in water.　　　2) Dissolving Ammonium Salt in water
   3) Dissolving Urea in water　　　　4) Introducing a Magnesium ribbon to a dilute HCl solution.

11. Consider the following statements about viruses.
    a) Viruses can only be seen with the electron microscope.
    b) Viruses have DNA and RNA   c)   Some metabolic activities take place in viruses.
    Select true statement from above on viruses.
    1) a   2) a , b   3) a , c   4) a, b, c

12. What is the potential energy stored in a fruit which has a mass of 200 g, at a height of 4 m above from the ground.
    1) $\dfrac{200 \times 10 \times 4}{1000}$ 2) $200 \times 10 \times 4$ 3) $\dfrac{1000}{200 \times 10 \times 4}$ 4) $\dfrac{200 \times 10 \times 4}{1000 \times 100}$

13. Which of the following statements is incorrect regarding Chromatography techniques.
    1) This is used to segregate the components of a non volatile mixture.
    2) Here, the components which attract to the paper will move along the paper for a long distance.
    3) This method is used to recognize toxic chemicals mixed with water.
    4) Paper used in this technique is known as stationary phase.

14. What is the ratio between unhealthy : healthy children born in a marriage between a carrier woman and a healthy man?
    1) 1 : 3   2) 3 : 1   3) 1 : 1   4) 2 : 1

15. Which of the following, cannot be seen in a longitudinal section of a vertebrate.
    1) Dorsal spinal chord   2) Dorsal heart   3) Gill Slits   4) Post anal tail

16. Two sound waves produced by a musical instrument is given beside.
    Which of the following statements is correct regarding those waves.
    1) Amplitude of both A and B are equal
    2) Pitch of both A and B are equal.
    3) Loudness of both A and B are equal.
   4) Wave length of both A and B are unequal.
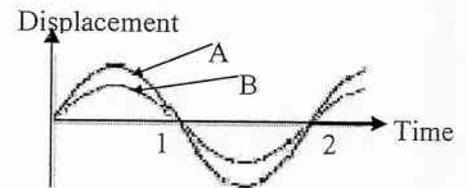
17. Formular of the Carbonate of X element is X_2CO_3. Nitrate of the Y element is $Y(NO_3)_2$. If so Carbonate of 'Y' would be
    1) $Y_2(CO_3)_3$ 2) YCO_3 3) Y_2CO_3 4) $Y(CO_3)_3$
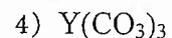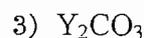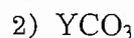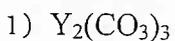
18. Which of following statements is incorrect regarding Photosynthesis process.
    1) Autotrophs produce food by photosynthesis.
    2) The main product of this process is a monosaccharide.
    3) Carbon dioxide gas and water are the raw materials of photosynthesis.
    4) Foods produced during photosynthesis are translocated through phloem.

19. Calculate the resistance of the fixed resistor shown beside.
    1) $212 \times 5\% \ \Omega$ 2) $212 \pm 5\% \ \Omega$ 3) $2100 \pm 5\% \ \Omega$ 4) $2000 \times 5\% \ \Omega$
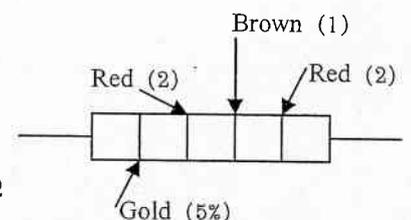
20. What mass of Calcium (Ca = 40) , contains equal number of atoms in 12 g of Magnesium (Mg = 24)
    1) 20 g   2) 40 g   3) 10 g   4) 80 g

21. Which of the following is incorrect regarding an endocrine gland and hormone released by it.
    1) Pituitary gland – Growth hormone   2) Ovaries - Progesterone
    3) Pancreas – Glucogen   4) Thyroid - Adrenaline

2

22. Identify the diseases relevant to the following symptoms and choose the correct sequential order.
   a) Stomach pain, diarrhea, puncture of intestine, passing blood with stools.
   b) Chough, breathing difficulties, no vocals
   c) Activities maintained by a specific part of the brain get exhausted due to the death of cells in the brain.
   1) Typhoid, Bronchitis, Stroke
   2) Diarrhea, Bronchitis, Heart attack
   3) Gastritis, Pneumonia, High blood pressure
   4) Diarrhea, Silicosis, Stroke

23. Three statements about three elements are given below.
   a) Is an electrical insulator used as a fungicide
   b) React with hot water. Act as a metal which prevent corrosion.
   c) Used in welding, metals and production of glass.
   Correct sequential order of these elemtns.
   1) C , Zn , Si
   2) S , Zn , B
   3) S , Mg , Si
   4) S , Mg , B

24. Weight X is loaded on a trolley which is kept on a smooth plank as shown in the figure. The trolley is joined to a weight W with the help of a string which is passing through a pulley. When weight 'W' is released the trolley moves towards the weight. Now another weight similar to X is loaded to the trolley and let the trolley move as previously. What is the conclusion about time taken by the trolley in both times when traveling from P – Q?
   1) Trolley moves in constant velocity.
   2) Trolley moves in acceleration.
   3) Trolley moves in deceleration.
   4) Cannot give a specific comment on the motion.
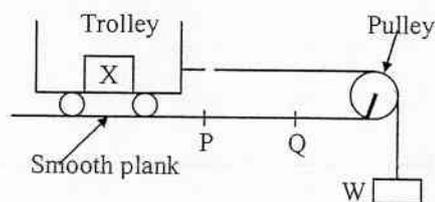
25. Hydrogen peroxide will be dissociated when Manganese dioxide is added to it. Which of the following statements is **incorrect** regarding catalysts.
   1) Speed of a reaction is increased by catalyst while speed of a reaction is decreased by inhibitors (anti catalyst)
   2) It remains unchanged in the reaction.
   3) Nickel is used as a catalyst in haber process.
   4) Catalysts are specific for a specific reaction.

26. What is the substance which effects underground water terribly?
   1) Discarded cells and batteries.
   2) Detergent mixed water.
   3) Droplets of insecticides and pesticides
   4) Plastic and regiform

27. Which is not a cranial reflex?
   1) Sneeze
   2) Blinking of eyelids
   3) Taking off hand from a hot object when it is touched.
   4) Salivating

28. Iron is extracted in the blast furnace. The soil particles with Iron is removed by
   1) Coke
   2) Hematite
   3) Clay
   4) Limestone

29. What is the resultant force act on the object?
   1) 120 N to the East
   2) 220 N to the East
   3) 20 N to the West
   4) 100 N to the West
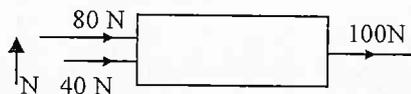
30. Property of a Covalent compound is,
   1) Being a solid at room temperature.
   2) Conduct electricity in aqueous solutions.
   3) Low melting and boiling points.
   4) Conduct electricity only in molten solutions.

31. Grass plants in a garden was reaped by a catty. But after some days it seems to be they were regrowing again. What is the reason for the re growth of the grass plants?
   1) Activity of Apical meristem
   2) Activity of intercalary meristem
   3) Activity of lateral meristem
   4) Activity of buds.

32. Which property is increased, when moving across the periodic table from left to right.
   1) Atomic radius
   2) Metalic properties
   3) First ionization energy
   4) Reducing ability

33. Which of the following statements is correct regarding tissue culture.
   1) Vitroplant is used to enhance the growth of roots and buds.
   2) Specially formed tissues are needed for this purpose
   3) New plant get from this, is totally different from mother plant.
   4) This also can be done in the school laboratory.

34. A Mercury barometer is given in the diagram. If a small hollow is made in the top of that inverted tube, what is the observation that you will observe?
   1) Height of the Mercury column will not change.
   2) Mercury column will drop down to level Y
   3) Mercury level will drop down to level X
   4) Mercury in the external beaker will out flow.
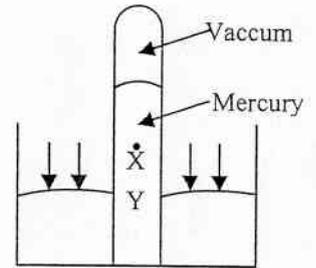
35. Identify the cells below. Correct sequential order of these cells are,
   (a)   (b)   (c)   (d)
   1) Lymphocytes, Eosinophils, Nerve cells, Monocytes
   2) Monocytes, Lymphocytes, Smooth muscle cells, Lymphocytes
   3) Monocytes, Neutrophils, Smooth muscle cells, Paranchyma cells
   4) Lymphocytes, Basophils, Fibre cells, Clamydomanas cells
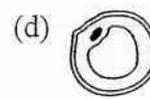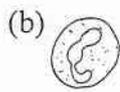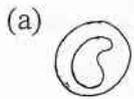
36. Some activities shown by three metals in the reactivity series are given below.
$$X + Y^{++} \rightarrow X^{++} + Y$$
$$Z + X^{++} \rightarrow Z^{++} + X$$
   Arrange them according to their reactivities,
   1) $X < Y < Z$
   2) $Z < X < Y$
   3) $Y < X < Z$
   4) $Y < Z < X$

37. What is the system, affected by the Zika Virus which rapidly spread among some countries recently?
   1) Nervous system
   2) Respiratory system
   3) Digestive system
   4) Excretory system

38. Element A has 15 electrons. 15 protons and 17 neutrons. Which one is correct regarding the data of this element.
   1) $^{15}_{15}A$
   2) $^{17}_{15}A$
   3) $^{32}_{15}A$
   4) $^{15}_{32}A$

39. Which incident is not suitable regarding Newton's third law.
   1) Canoe moves forward when rowing its paddle backward.
   2) Feeling a pain when knocking a wall hard.
   3) Recoil caused by the gun when shooting.
   4) A passenger standing in a moving vehicle leans forward when the brakes are applied.

40. What is the scientific name of the national flower of Sri Lanka?
   1) *Mesua nagassarium*
   2) *Nymphaea stellata*
   3) *Cocos nucifera*
   4) *Nymphaea nouchali*

Name :-...   Time : 3 Hours

Part II

➤ Write in clear hand writing.
➤ Answer all 4 questions in Part A, in the space given itself.
➤ Answer 3 questions you like in Part B.
➤ Finally attach Part A and Part B together and hand over the set.

Part A – Structured Questions

01) A) Collecting of swage lead the way to many aggravating social and health problems in present Sri Lanka. Therefore many environmental scientists and government institutions do various experiments upon, to find a solution to this matter.

   i) One method out of these solutions is, recycling. What is mean by recycling of swage? *(M-01)*

   ....
   ....

   ii) Draw the symbol which is in the packing of a product to apprise the customers, that, it is recyclable. *(M-01)*

   ....

   iii) Name two recyclable materials that we use in day to day. *(M-01)*

   ....

   iv) Name two groups of micro organisms, mainly contribute to decompose swage which confluented to the environment. *(M-01)*

   ....

   v) What is the equipment used to cultivate micro-organisms in the laboratory? *(M-01)*

   ....

   B) Disposal of swage into river water, open the way to many more environmental matters.

   i) What are the links in a food chain which harmfully affected by the collecting of swage to river water? *(M-01)*

   ....

   ii) Write a food chain of 3 links which is related to the river based environment. *(M-01)*

   ....

   C) Put "✓" if true, "✗" if false.

   i) Highly adapted organisms to a specific environment are dominantly affected by a change in the environment. (   )

   ii) Decomposers carry, enzymes man doesn't have. (   )

   iii) Corals are highly specialized organism to the marine environment. (   )

   iv) Roanu Cyclone is the one which lashed Sri Lanka heavily on the last days. (   )

   (M-02)

D) It is recorded there was a risk to breaking down of the bund of a tank at last few days due to floods.

    i) Suggest a hypothesis for the above problem using the knowledge of yours, about the scientific method. *(M-01)*

    ....

    ii) State the 3 characteristics of liquid pressure. *(M-02)*

    ....

    ....

    iii) What is the special stratagem used in the tank bund to bear the pressure exerted by the liquid. *(M-01)*

    ....

    iv) Calculate the pressure of a point which is at a depth of 10 m, under the water in a reservoir. $(g = 10 \text{ ms}^{-2}$, $\rho = 1000 \text{ kgm}^{-3})$ *(M-02)*

    ....

    ....

    ....

2) A) Digestive system is made for break down of foods into simple substances, and absorption of nutrients into the blood, and omission of waste materials from the body.
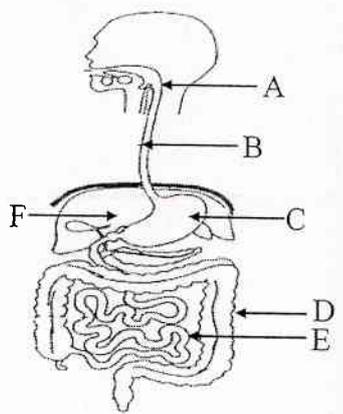
    i) Name the parts of the digestive system, A – F in the picture given below. *(M-03)*

    A - ....   B - ....

    C - ....   D - ....

    E - ....   F - ....

    ii) Name 3 main glands which release secretions to the digestive process. *(M-1 ½)*

    1. ....   2. ....   3. ....

    iii) Name the end products, which we get by main nutrients after the digestion. *(M-1 ½)*

    1. ....   2. ....   3. ....

    iv) a) In which part of the digestive system does absorption of above and products take place?

    .... *(M-01)*

    b) Write 2 adaptations of that part to increase the efficiency of absorption of nutrients to the blood. *(M-02)*

    1. ....

    2. ....

    c) What is the special duct which absorb, end products of lipid digestion? *(M-01)*

    ....

B) i) Write the path way of a Glucose molecule in sub sequential order, until it travels to a cell in the foot from the intestine, where it's produced. *(M-02)*

    ....

    ....

ii) What is the blood vessel which transport nutrients to the liver from the intestine? *(M-01)*

....

iii) Name 2 by products which produced when the break down of end products, of protein digestion, in the liver. *(M-01)*

1. .... 2. ....

iv) What is the name given to the process of eliminating these waste products, from the body?

.... *(M-01)*

03) Below is a part of the periodic table. Based on the above table answer the following questions.

i) Name mono valent element which doesn't belong to group one. *(M-01)*

i	ii	iii	iv	v	vi	vii	viii
H							He
Li	Be	B	C	N	O	F	Ne
Na	Mg	Al	Si	P	S	Cl	Ar
K	Ca						

....

ii) State two common characteristics of elements in group I except the element in first period. *(M-02)*

1. .... 2. ....

iii) a) State how, the first ionization energy of elements vary across a period, when moving from left to right. *(M-01)*

....

b) Explain the difference in first Ionization energies of two elements which is the last element of a period and the first element in the next period. *(M-02)*

....

....

iv) Write the chemical formulae of Aluminium Chloride and Hydrogen Sulphide *(M-01)*

Aluminium Chloride - ....

Hydrogen Sulphide - ....

v) Name the bond between two chlorine atoms in chlorine gas and explain the nature of that bond using a dot cross diagram which depicts electrons in the outer most shells of chlorine atoms. *(M-03)*

Nature of the bond - ....

Dot cross diagram - ....

....

vi) Show how Mg atom makes an ion, using the number of e and p in it. *(M-02)*

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vii) Aluminium was written as $^{27}_{13}Al$ in a table. According to that, give details about Aluminium atom *(M-03)*

a) Number of protons in the nucleus ....

b) Number of neutrons in the nucleus ....

c) Electronic configuration ....
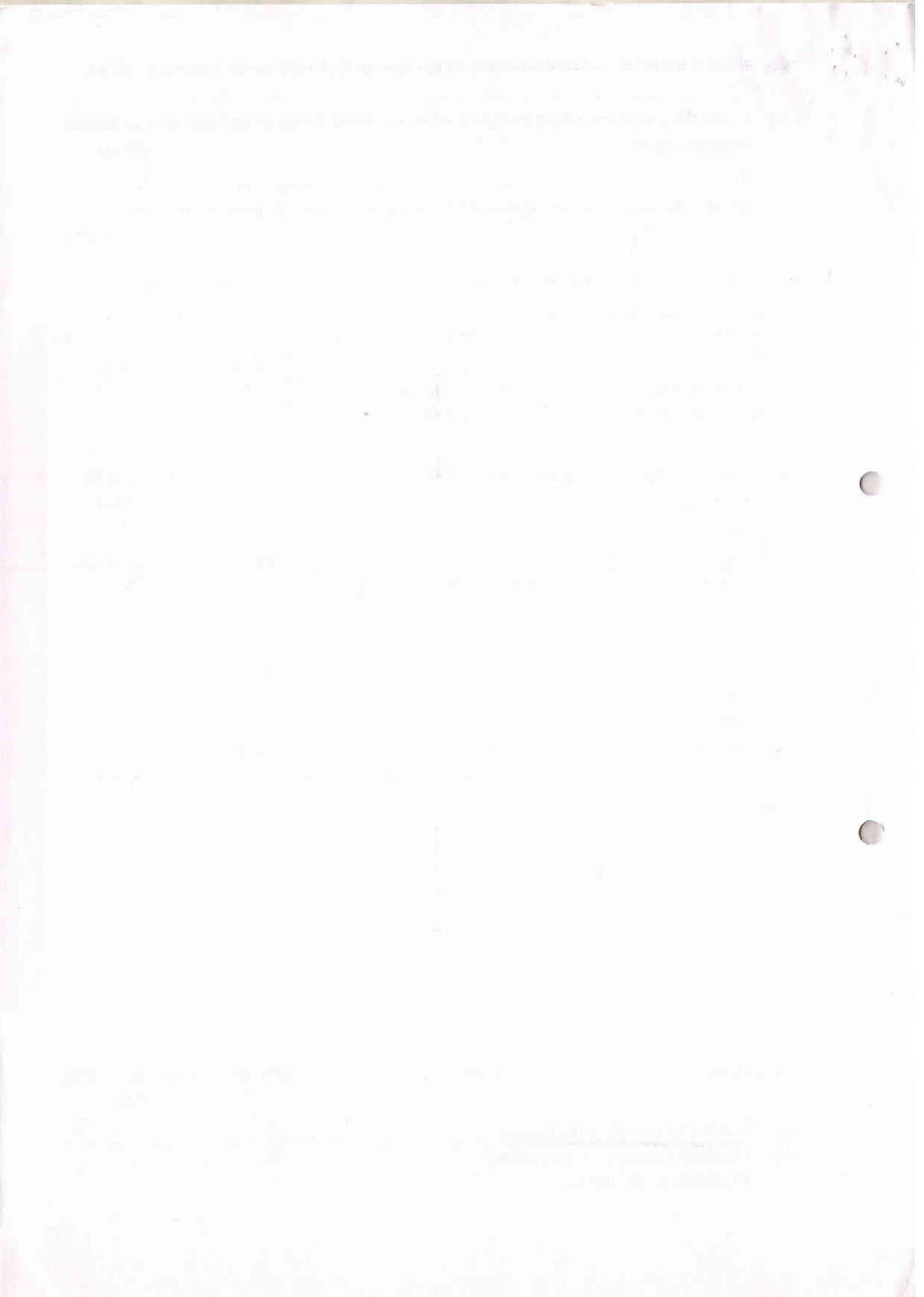
04) A) Data chart about the motion of a motor vehicle, which was running on road, heading north, is given below.

Time (s)	0	1	2	3	4	5	6
Velocity (ms^{-1})	0	3	6	9	12	12	12

i) Draw the velocity – time graph for the above table using relevant data from the table **(M-03)**

ii) How would you explain the motion of the vehicle during the first 4 seconds. **(M-01)**

....

iii) What is the acceleration during the first 4 seceonds? **(M-02)**

....

....

....

iv) What is the total displacement made by the vehicle? **(M-02)**

....

....

....

v) If the weight of the vehicle is 2000 N and the resistance force from the ground is 1000 N, calculate the force exerted by the engine in first 4 seconds. **(M-03)**

(gravitational acceleration = g = 10 ms^{-2})

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B) Object which kept on a horizantal surface is given below.

i) Mark the forces which act on the object at rest **(M-02)**

....

....
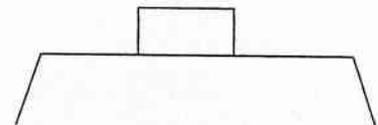
ii) Name two conditions that must be satisfied to keep the object still, under the above forces

....

.... **(M-02)**

4

Part B - Essay

➢ **Answer any 3 qustions.**

05) A) The diagram show an experimental setup made by a student which is used to study the growth process of a plant
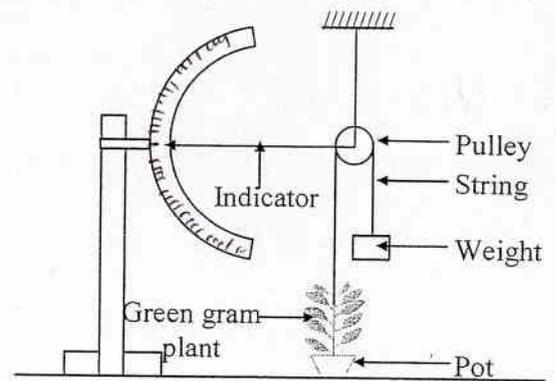
i) What is the name given to this setup? *(M-01)*

ii) How would you use this setup to get a measurement about the growth of the plant? *(M-01)*

iii) Write 2 strategies to get successful results from this setup. *(M-02)*

iv) Write a special feature of the plant which is used in this experimental setup. *(M-01)*

B) Another life process take place in the green gram plant mentioned above, is given in the picture below.
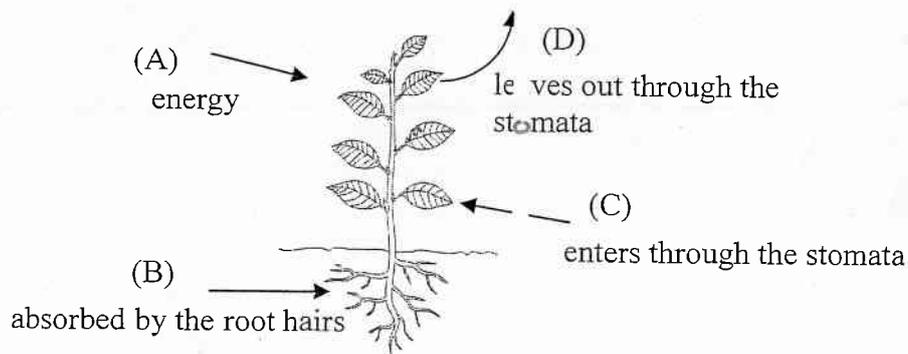
i) Name the materials / energies which are suitable for A, B, C and D *(M-04)*

ii) What is the life process mentioned above? *(M-01)*

iii) Name the main product in this process. *(M-01)*

iv) Write down a balanced chemical euqation to show the formation of above product. *(M-01)*

v) What is the susbtance, which absorbs 'A' energy to the leaf? *(M-01)*

vi) Due to the shortage of elements, absorbed by the rood hairs, plants get deficiency diseases. Due to the lack of which elements these diseases will formed. *(M-02)*

    (a) Chlorosis in tender leaves   (b) Death of the edges of leaves

    (c) Unnecessary thickening of leaves   (d) Growth of the roots get exhausted

C) Respiration can be named as another main life process which take place in human body.

i) What is the name given to the process of taking atmospheric air in to the lungs? *(M-01)*

ii) Write two special characteristics of the surface in the lungs to enhance the diffusion of air in the lungs, to the blood *(M-02)*

iii) Write down two differences between earobic and anaerobic respiration. *(M-02)*

5

06) A) The setip used to produce CO_2 gas in the laboratory is given below.
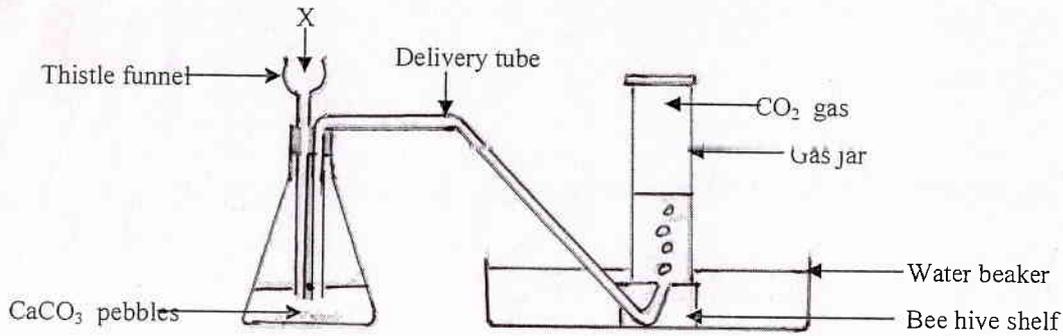
i)   What is the X liquid which introduce by the thistle funnel?   *(M-01)*

ii) How to dilute that liquid?   *(M-01)*

iii) Write an error in this setup and mention how you would correct that error.   *(M-02)*

iv) Write a strategy to speed up the production of gas.   *(M-02)*

v)   Write down the balanced chemical equation of the reaction given below which take place in the setup   *(M-01)*

$$CaCO_{3\ (S)} + HCl_{(aq)} \longrightarrow CaCl_{2\ (aq)} + CO_{2\ (g)} + H_2O_{(l)}$$

vi) If you need 5 moles of CO_2

   (a) How many moles of $CaCO_3$ must be used?   *(M-02)*

   (b) What is the mass of 5 moles of CO_2? (C = 12 , O = 16)   *(M-02)*

   (c) How many molecules are there in 5 moles of CO_2 ?   *(M-01)*

vii) Concisely explain how to identify CO_2 gas.   *(M-01)*

B) Lime stone is a raw material which is used in many industries. Extraction of iron is an industry among those. The kiln used to extract iron is given below.

i)   What is the mane of this kiln?   *(M-01)*

ii) What are the raw materials introduced from the top of the kiln? *(M-01)*

iii) What is the range of temperature maintained inside the kiln?   *(M-01)*

iv) By which substance the oxides of iron is reduced?   *(M-01)*

v)   What is the function of $CaCO_3$ introduced?   *(M-01)*

vi) What are the A and B materials which collected at the bottom of the kiln?

   (M-01)

vii) Based on which physical property, iron is separated from other material?   *(M-01)*
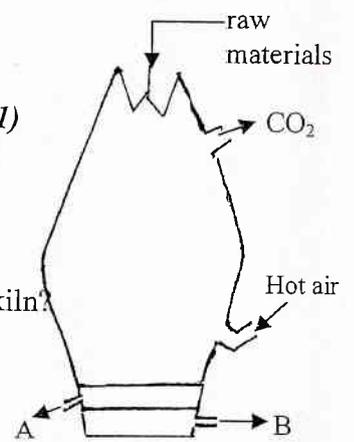
07) A) Light is the type of energy which gives sense of sight. We receive light mainly by the sun. When light rays fall on different surfaces reflection and refraction take place. In the lab we use mirrors, lenses, prisms and glass blocks to control the light rays.

i)   Write the optical instrument which must be used inside the box 'X' to control light rays as mentioned in the figures.   *(M-04)*
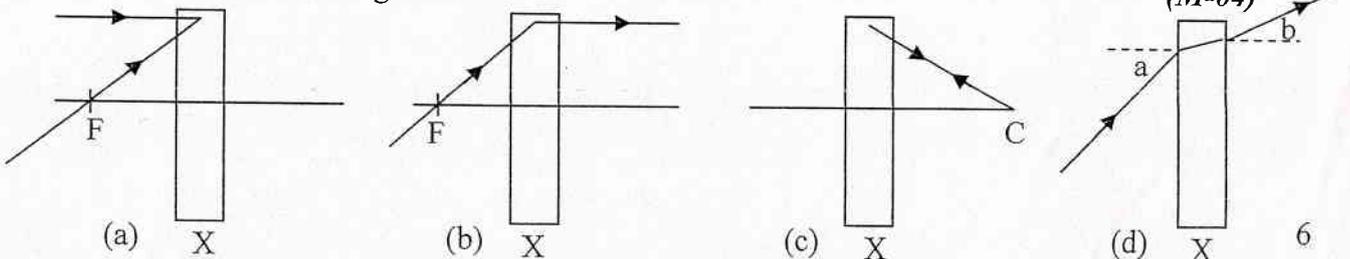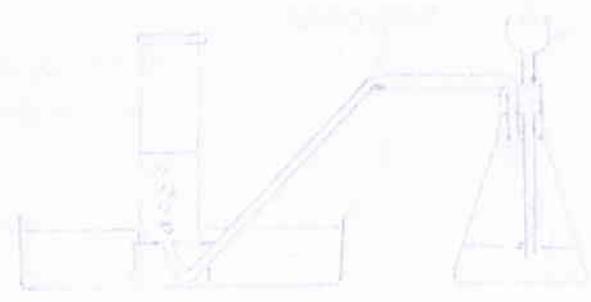

(a) X   (b) X   (c) X   (d) X   6

ii) Why is that light ray which comes to the centre of curvature of a convex mirror, will be reflected in the same path. *(M-02)*

iii) Construct the image of an object which is to be kept as u = r in front of a concave mirror, using two rays. *(M-02)*

iv) Simple microscope is use to observe the objects which can be seen by our naked eyes, but which are not clear to the naked eye.

(a) Draw the ray diagram to show how images are formed by a simple microscope. *(M-02)*

(b) Write 2 characteristics of the image formed. *(M-02)*

B) Activity done by a group of students on the refraction of liquid is given beside. (A, B, C, D are laser rays)

i) Why 'A' light ray doesn't refract? *(M-01)*

ii) (a) What can be the letter relevant to the incident ray which is needed to get 'X' ray? *(M-01)*

(b) What is the name given to introduce the angle of incident, when the occasion we get 'X' ray? *(M-01)*
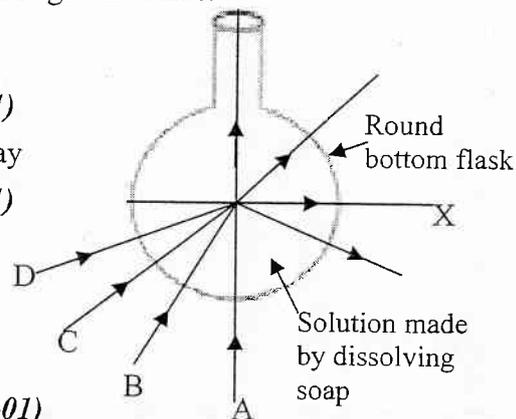
iii) How would you introduce the behaviour of 'D' ray. *(M-01)*

iv) B ray travels through the water and enters into the gaseous medium.

(a) Give the special names given to introduce, water and air mediums respectively. *(M-02)*

(b) If incident angle and refracted angle are 'i' and 'r' respectively, mention an expression for the refractive index of air, relative to the water. *(M-02)*

08) A) Regulating a constant internal environment of living beings is known as homeostasis.

i) What is known as the internal environment of the human body? *(M-01)*

ii) What is the range of temperature which human body temperature can be vary? *(M-01)*

iii) What is the thermoregulatory centre of the human body? *(M-01)*

iv) Write two mechanisms that take place, to protect the body temperature with the changing external environment. *(M-02)*

v) Humans are warm blooded animals. What is the meaning of 'warm blooded'? *(M-01)*

vi) Write 2 factors that must be kept constant in the internal environment except temperature. *(M-02)*

B) Temperature of an object is determined by the amount of heat gain, or the amont of heat loss, by the object.

i) (a) Write three modes of transference of heat. *(M-1 ½)*

(b) Write a way which heat transfer will take place in each method. *(M-1 ½)*

ii) Thermometers are used to measure the temperature of human body and other objects.

a) What is temperature? *(M-01)*

b) Write the range of temperature which mercury expansion will take place. *(M-01)*

c) Write absolute zero in Celsius. *(M-01)*

iii) (a) $27\,^0C$ (b) $100\,^0C$ Write in Kelvin *(M-02)*

iv) (a) $0\,K$ (b) $400\,K$ Write in Celsius *(M-02)*

v) Due to the absorption or emission of heat temperature of an object will change

a) Mass of a glass beaker is 500 g. It contains 400 g of water in $25\,^0C$. Calculate the quantity of heat needed to boil the water inside the beaker. *(M-03)*

(Specific heat capacity of water is $4200\ Jkg^{-1}K^{-1}$

and specific heat capacity of glass is $840\ Jkg^{-1}K^{-1}$)

09) A) We need to prepare various mixtures in our day today life. Water is used as the solvent in many mixtures.

i) Define the word 'Mixture' *(M-01)*

ii) Write an example for

a) a homogenous mixture b) a heterogeneous mixture *(M-02)*

iii) A student got two equal volumes of water and attempted to dissolve some amoung of salt in one and some amount of birdlime in the other.

(a) What could be student's observation? *(M-01)*

(b) Explain the observation of the student concisely. *(M-02)*

iv) (a) You need to prepare a $2\ moldm^{-3}$ of Sodium Chloride solution. If all the instrument and materials needed are supplied to you, explain how would you make the solution, in 4 steps. (Na = 23 , Cl = 35.5) *(M-04)*

(b) Draw a structure of a label suitable for the solution, you made. *(M-01)*

(c) Descirbe an experiment which you can do to prove that ionic bonds are present in Sodium Chloride solution including diagrams. *(M-02)*

B) Electrical energy is an essential thing we need in our daily activities. Materials which transmit electricity are called conductors and materials which do not transmit electricity are called insulators. The relationship between the potential difference and the current which flows through a conductor was presented by George Simon Ohm

i) State down the Ohm's law. *(M-01)*

ii) We can prove Ohm's law using the circuit given below.

nicrome coil
Current regulator
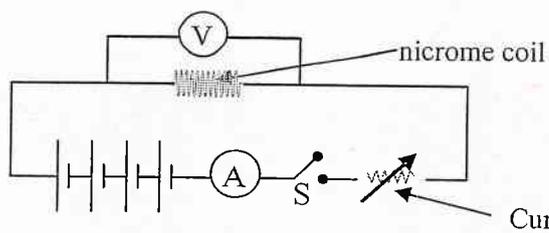
(a) When you taking the readings, S switch must be closed and the readings of Ammeter and Voulmeter must be noted down. Why is that, these readings must be obtained quickly. *(M-01)*

(b) What is the function of current regulator? *(M-01)*

(c) Draw the graph that you will get by plotting the reading obtained by the experiment. *(M-02)*

(d) Find the resistance of the nicrome coil if the readings of the voltmeter and Ammeter are 3V and 0.6 A respectively. *(M-02)*