A3 - 06
A4 - 01

மேல் மாகாணக் கல்வித் திணைக்களம் - கொழும்புக்கல்வியலயம்
Western Provincial Education Department - Colombo Educational Zone

இரண்டாம் தவணைமதிப்பீடு - 2016
Second Term Evaluation - 2016

11ஆந்தரம் தரம் 11 Grade 11	விஞ்ஞானம் I விஞ்ஞானம்-I Science Paper I	ஒரு மணித்தியாலம் One Hour

Note: **(i) Answer all questions.**

(ii) In each of the questions 1 to 40, pick one of the alternatives (1), (2), (3), (4) which you consider is correct or most appropriate .

(iii) Mark a cross (x) on the number corresponding to your choice in the answer sheet provided.

(1) The element present in human body in the highest percentage is,

(1) O (2) C (3) H (4) N

(2) The pair of molecules having the same relative molecular mass is, , (C=12, H=1, O=16, N=14)

(1) CH_4 & NH_3 (2) CO_2 & NO_2 (3) N_2H_2 & HCHO (4) CH_3OH & N_2O_4

(3) Electrical energy is measured commercially by,

(1) J (2) Js^{-1} (3) kWh (4) kWh^{-1}

(4) Select the disaccharide out of the given carbohydrates,

(1) fructose (2) lactose (3) glycogen (4) galactose

(5) Which of the following ions contain similar number of electrons as present in a Ne atom?

(1) Ca^{2+} & O^{2-} (2) O^{2-} & Mg^{2+} (3) K^+ & F^- (4) Li^+ & Mg^{2+}

(6) The absolute zero presented in Celcius scale is,

(1) 0^0 C (2) 273^0 C (3) -473^0 C (4) -273^0 C

(7) Type of cells in a leaf in which photosynthesis **does not** take place is,

(1) pallisade parenchyma (2) guard cells

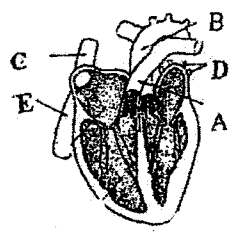
(3) epidermal cells (4) parenchyma cells

(8) Chemical formula of a compound is AB_2. Which answer gives appropriate elements for A & B respectively?

(1) Ca & Cl (2) K & O (3) Na & Cl (4) Ca & O

(9) The electric current passing through an electric iron of 1150 W when it is connected to 230 V power supply is,

(1) 5 A (2) 8 A (3) 11.5 A (4) 23 A

(10) 

The answer with veins associated only with the heart is,

(1) A, B, C (2) B, C, D

(3) C, D, E (4) A, D, E

(11) Four compounds are arranged in the ascending order of their ability to release OH^- ions in an aqueous medium,

$H_2SO_4 < H_2CO_3 < NH_4OH < NaOH$

Which property of compounds vary in an opposite manner?

(1) acidity (2) basicity (3) volatility (4) polarity

(12) Gravitational potential energy of an aeroplane moving at a certain height is equal to its kinetic energy. Its velocity is 200 ms^{-1}. Height in between the aeroplane & the ground level is, (g= 10 ms^{-2})

(1) 200 m (2) 2000 m (3) 20,000 m (4) 400 m

(13) Function of the Golgi complex is,

(1) generation of energy (2) transportation of proteins

(3) water balancing in the cell (4) production of secretions

(14) Select the correct statement regarding water (H=1, O=16)

(1) mass of 1 mole of water is 9g

(2) number of Hydrogen atoms in 1 mole of water is equal to the number of oxygen atoms

(3) number of moles of Oxygen atoms in 1 mole of water is 1.

(4) Number of water molecules in a mole of water is 3.011×10^{23}

(15) Example for a wave in which particles of the medium vibrate parallel to the direction of propagation of the wave is,

(1) sound waves (2) television waves (3) RADAR (4) light waves

(16) What is the substance which is definitely reabsorb from the glomerular filtrate of a healthy person?

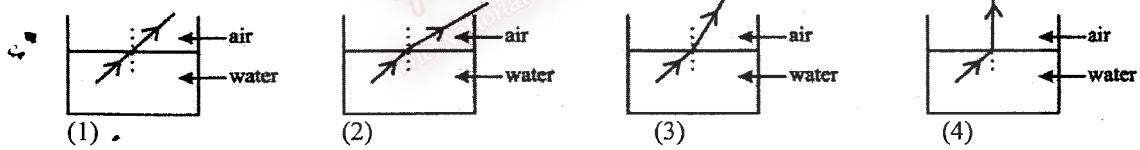
(1) glucose (2) vitamins (3) water (4) minerals

(17) It was observed that a paper bag containing table salt had got wet and the salt had bitter taste. What is the correct scientific explanation regarding this observation?

(1) it contains $MgCl_2$ and it is deliquescent (2) it contains Mg SO_4. it is molten

(3) it contains NaCl and it is deliquescent (4) all of the above explanations are correct.

(18) Select the correct ray diagram which shows a ray of light passing from water to air.



(1) (2) (3) (4)

(19) Enzymes which are active in an acidic medium,

(1) pepsin, rennin (2) pepsin, amylase (3) amylase, tripsin (4) amylase, lipase

(20) A method to separate the components of a chlorophyll solution is,

(1) filtration (2) crystallization (3) chromatography (4) condensation

(21) Given below are some statements about isotopes.

A – number of electrons in isotopes are equal.

B – number of neutrons in isotopes are equal.

C – atomic numbers of isotopes are different.

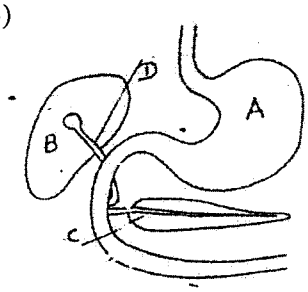
Corrects statement/statements is/are,

(1) only A (2) only B (3) only A & B (4) only B & C

(22) Amplitude and wave length of a wave is 0.2 m and 6m respectively. Find the velocity of the wave if its time period is equal to 0.02 s.

(1) 12 ms^{-1} (2) 300 ms^{-1} (3) 10 ms^{-1} (4) 600ms^{-1}

(23)



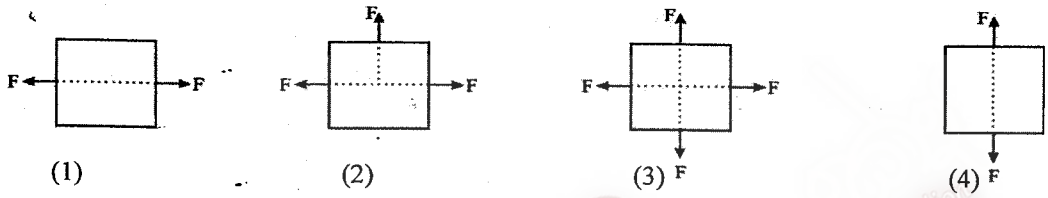
Parts A, B, C, & D respectively are,

(1) A – stomach B- liver C – pancreas D – bile duct
(2) A – stomach B- liver C – bile duct D – pancreas
(3) A – liver B- stomach C – pancreas D – bile duct
(4) A – liver B- stomach C – bile duct D – pancreas

(24) It is not suitable to increase the temperature upto their boiling points in extracting volatile compounds from plant materials. A reason for this may be,

(1) consumption of lot of fuel when they are heated upto the boiling point.
(2) they get mixed with water well.
(3) these volatile compounds can be destroyed at the boiling point.
(4) it takes a lot of time.

(25) An instance when an object is **not** in equilibrium under a group of forces is,



(1) (2) (3) (4)

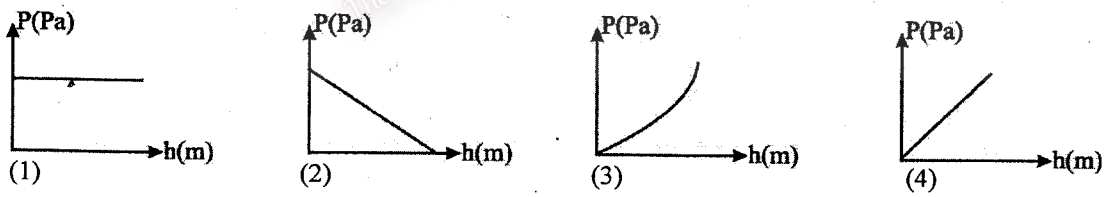
(26) Palma membrane of a cell consists of,

(1) proteins (2) lipids (3) phospholipids (4) phospholipids & proteins

(27) Find the answer with metals in the descending order of their reactivity.

(1) Fe, Cu, Al, Mg (2) Al, Mg, Cu, Fe (3) Mg, Al, Fe, Cu (4) Mg, Al, Cu, Fe

(28) Correct graph showing change in liquid pressure along with depth is,



(1) (2) (3) (4)

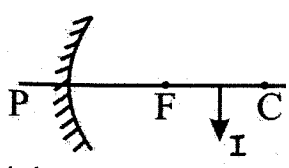
(29) An instance where meiosis takes place is,

(1) growth (2) asexual reproduction
(3) healing wounds (4)gamete formation

(30) Most suitable method to increase the mass of $CuSO_4$ dissolving in constant volume of water is,

(1) dissolve $CuSO_4$ in powder form (2) reduce the temperature of the solution
(3) dissolve $CuSO_4$ in crystal form (4) use appropriate catalysts

(31)



To obtain the image 'I' as shown in the ray diagram the object should be placed,

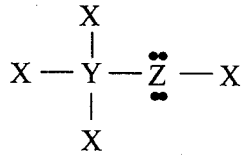
(1) in between P & F (2) beyond C (3) on C (4) in between F & C

(32) Similarity in between cardiac muscle cells and skeletal muscle cells is,

(1) presence of cross striations (2) Branched

(3) voluntary (4) involuntary

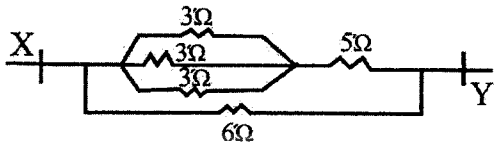
(33) Following is the Lewis structure of a compound formed by three elements



X, Y & Z respectively are,

(1) C, H, O (2) H, C, O (3) O, H, C (4) C, N, O

(34) Equivalent resistance in between X & Y in the given circuit is,



(1) 9 Ω (2) 12 Ω (3) 20 Ω (4) 3 Ω

(35) This is **not** an endocrine gland,

(1) salivary glands (2) pituitary (3) pancreas (4) thyroid gland

(36) A suggestion which is **not** acceptable to meet the increasing demand for food for the increasing population is,

(1) producing new seed varieties with suitable features

(2) developing agro instruments

(3) promoting the use of pesticides

(4) introducing latest technology for farming

(37) Following three statements are based on the lymphatic system

A – movement of muscles facilities the circulation of lymph

B – lymph circulates in the lymphatic system towards one direction

C – lymph nodes are present in the lymphatic system

Correct statements are,

(1) only A & B (2) only B & C (3) only A & C (4) All A, B, & C

(38) Most suitable substance to be applied on the place of bee sting is,

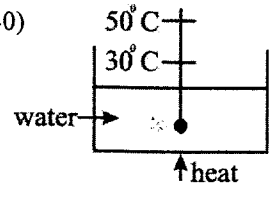
(1) vinegar (2) lime (3) lime juice (4) salt solution

(39) What is excepted by introducing dry air of 650^0 C into the blast furnace in extracting iron?

(1) take coke into its ignition temperature (2) to remove waste in haematite

(3) to decompose $CaCO_3$ (4) to form slag and molten iron

(40)



Beaker shown in the figure contains 500 g of water. It is required to raise its temperature from 30^0 C to 50^0 C. Required amount of heat for this purpose is given by, (specific heat capacity of water is 4200 $JKg^{-1}K^{-1}$)

(1) 500 x 4200 x 30 J (2) 0.5 x 4200 x (50-30) J

(3) 0.5 x 4200 x 50 J (4) 500 x 4200 x 50 J

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மேல் மாகாணக் கல்வித் திணைக்களம் - கொழும்புக்கல்வியியல்வலயம்
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දෙවන වාර ඇගයීම - 2016
இரண்டாம் தவணைமதிப்பீடு - 2016
Second Term Evaluation - 2016

11ශ්‍රේණිය
தரம் 11
Grade 11

විද්‍යාව II පත්‍රය
விஞ்ஞானம்பகுதி II
Science Paper- II

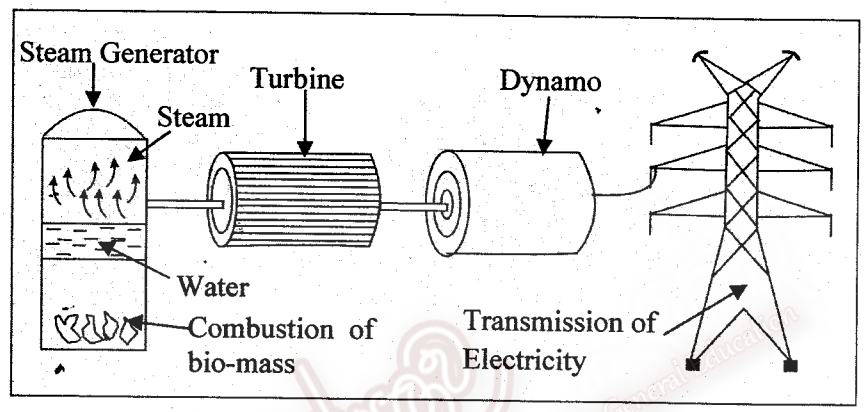
පැය තුනයි
மூன்றுமணித்தியாலங்கள்
Three Hours

Note :-

- Answer all the questions in Part A in this paper itself.
- Answer only Three questions from five questions in Part B

PART A

(1) Attempts are made nowadays to produce secondary sources of energy to face the world energy crisis. Accordingly following diagram is based on the process of producing electrical energy in a thermal power plant.



(I) (a) What is meant by 'energy crisis'?

..... (1 mark)

(b) Complete the transformation of energy related to the above process (3 marks)

Chemical Energy → [ ] → [ ] → [ ]

(c) What is the method of transmission of heat to boil water in the steam generator?

..... (1 mark)

(d) Name two other methods of transmission of heat

..... (1 mark)

(II) Put (✓) for correct statements and (x) for incorrect statements.

a) Bio mass is the sum of plant bodies, animal bodies and waste products of them ( )

b) During the production of electricity, the turbines could be rotated only by superheated steam. ( )

c) Anaerobic bacteria contribute for the production of bio gas. ( )

d) More environmental pollution is caused by the combustion of bio mass than the combustion of fossil fuels. ( )

(4 marks)

(III) (a) What is the basic type of energy that is stored as chemical energy in bio masses ?

..... (1 mark)

(b) Name the process by which the above mentioned type of energy is stored in plants?

..... (1 mark)

(c) Write the balanced chemical equation for the reaction occurring in above process.

..... (1 mark)

(IV) (a) What is the reagent used to identify the presence of glucose in a given food item?

..... (1 mark)

(b) State the colour change occurring as a result of the above activity.

..... (1 mark)

15 marks

(2) (A) Hormones are important to control many processes in our body.

(i) What is the term used to identify the coordination done by hormones.

..... (1 mark)

(ii) A player was hit by a fast ball and fell down. His mother jumped up in panic.

(a) What is the hormone which could have secreted in her.

..... (1 mark)

(b) Which gland secrets it

..... (1 mark)

(c) Write two differences in her body in response to this hormone.

.....

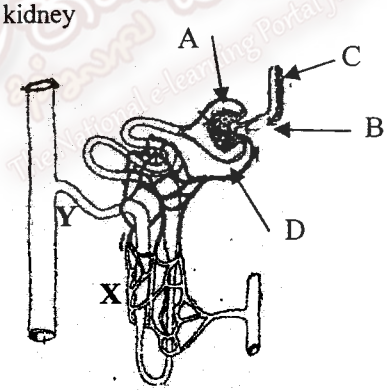
..... (1 mark)

(iii) Fill in the blanks in the table using your knowledge on hormones.

Hormone	Place of Secretion	Function
• Thyroxin (c) ..... (e) ..... • Growth hormone	(a) ..... • ovaries (f) ..... (g)	(b) ..... (d) ..... • controlling blood glucose level (h) .....

(8 x ½ = 4 marks)

(B) (I) Given below is a part of kidney



(i) Name the parts A,B,C,D

A ..... B .....

C ..... D ..... (2 marks)

(ii) (a) Write two things that is not filtered at B

(1) ..... (2) ..... (2 marks)

(b) Why are not they filtered ?

..... (1 mark)

(iii) What materials are compulsorily absorbed at X?

..... (1 mark)

(iv) Write the two main constituents of liquids in tube Y.

..... (1 mark)

(15 marks)

(3) (A) Data regarding chemical substances P,Q and R is given bellow.

P – Crystalline solid ionic substance, Dissolves well in liquid Q

Q – Colourless liquid of which boiling point is 100^0 C.

R – A volatile liquid with a low boiling point, P does not dissolve in this.

(i) State two factors affecting the solubility of a given substance

.....

..... (2 marks)

(ii) Name a polar organic solvent and a polar inorganic solvent respectively.

.....

..... (2 marks)

(iii) Crystals of **P** which contained other impurities in small amounts were dissolved in liquid **Q** of which temperature was 80^0 C to make a highly concentrated solution. Then that solution was filtered off and allowed to cool down.

(a) What would be the observation when the filtrate cool down?

..... (1 mark)

(b) What do you call the process mentioned in 'a' above ?

..... (1 mark)

(c) Half of a test tube was filled with liquid **Q** and then few drops of **R** liquid was added into it. If it formed an unclear mixture after shaking, what type of a mixture was it?

..... (1 mark)

(iv) 10 g of crystals of **P** were dissolved in liquid **Q** and a solution of 1 dm^3 was prepared. Present the composition of P in that solution by means of (m/v)

..... (2 marks)

(v) Arrange the precipitates $CaCO_3$, NaCl and $CaSO_4$ formed in each tank of a saltern in the descending order of their solubility.

..... (1 mark)

(B) Following date was obtained from an activity done in order to identify acids, bases and neutral substances by using indicators.

Solution	Blue Litmus	Red Litmus
X	Turns Red	Turns Red
Y	Turns Blue	Turns Blue
Z	Turns Blue	Turns Red

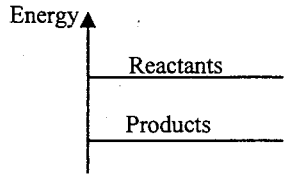
(i) Identify the acid, base and the neutral substance out of X, Y, and Z. State the reason for that identification too.

X .....

Y .....

Z ..... (3 marks)

(ii) Energy diagram for the reaction in between Mg and X is given below.



(a) Accordingly, is it an exothermic reaction or an endothermic reaction ?

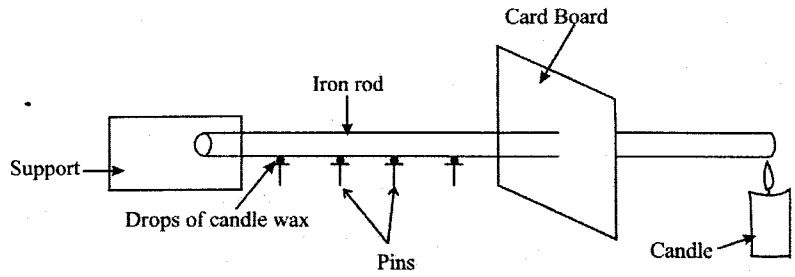
..... (1 mark)

(b) State the reason for your answer.

..... (1 mark)

15 marks

(4) Diagram shows a set up arranged by a group of students to study about heat transfer



(I) Write two observation here

……

…… (2 marks)

(II) What is the type of heat transfer identified here?

…… (1 mark)

(III) State two instance in which the above mentioned method is made use in day-to-day life.

……

…… (2 marks)

(IV) An Aluminium rod can be used instead of the iron rod here. State two other substances that can be used here.

…… …… (1 mark)

(V) What can you say about the above observation, if Aluminium rod is used here?

…… (1 mark)

(VI) Specific heat capacity of Aluminium is 900 $Jkg^{-1}K^{-1}$

(a) What is meant by specific heat capacity?

……

…… (1 mark)

(b) State two factors affecting specific heat capacity

……

…… (2 marks)

(VII) An Aluminium vessel of 200 g mass at room temperature (30^0C) contains ½ kg of water. Water in the vessel is heated up to 100^0C. (Specific heat capacity of water is 4200 $Jkg^{-1}K^{-1}$)

(a) Calculate the amount of heat absorbed by water.

……

……

…… (2 marks)

(b) A student said that amount of heat absorbed by water is lesser than the heat supplied to it. State two reasons for this.

……

…… (2 marks)

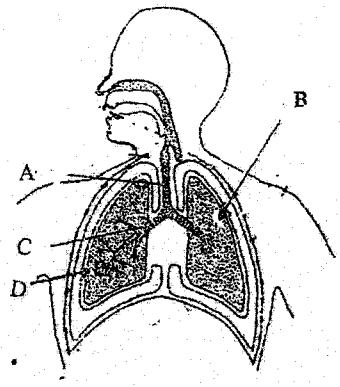
(c) When heat was supplied to water at 100^0C, the temperature didn't increase, but an absorption of heat was observed. What is the name given for this absorbed heat?

…… (1 mark)

15 marks

Part II Essay

(5) Given below is a diagram of the human respiratory system.



(i) Name A,B,C and D (2 marks)

(ii) What is the term used to identify the hardenings in A? What is the importance of it? (2 marks)

(iii) Structure D is very important for respiration.

(a) What is the advantage of having D structure? (1 mark)

(b) What is happening at D ? (1 mark)

(c) Write two adaptations in D to increase the efficiency of the above process. (2 marks)

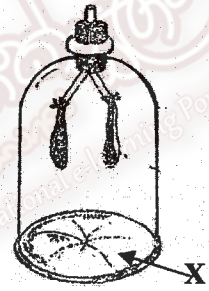
(iv) Write two changes happening to the air entering through our nose? (2 marks)

(v) What is the advantage of having cilia and nasal epidermis for the respiratory process? (1 mark)

(vi) It is not wise to speak while eating, explain scientifically. (2 marks)

(vii) Explain how this system works using movements of the ribs and diaphragm. (3 marks)

(B) The following apparatus can be used to demonstrate the respiratory process in gaseous exchange.



(i) Write a material can be used as X (1 mark)

(ii) What structure in respiratory system in X representing? (1 mark)

(iii) How would you demonstrate gaseous exchange in respiration using the above model? Explain briefly. (2 marks)

(20 marks)

(6) (A) Following is a part of the periodic table. Symbols of elements are **not** standard symbols.

			A		B		
C	D					E	

(i) Name the scientist who classified the elements using their periodic patterns. (1 mark)

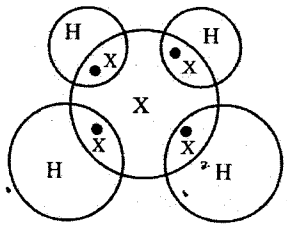
(ii) What do you mean by a "Periodic pattern" according to the periodic law? (1 mark)

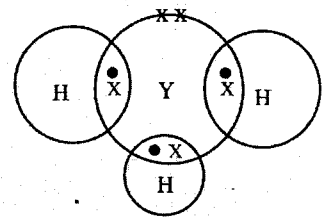
(iii) Write two patterns of elements that change periodically when moving from left to right in 2nd and 3rd periods. (2 marks)

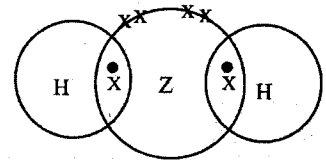
(iv) Write the chemical formula of the compound formed by B and D. (1 mark)

(v) What is the observation when phenolphthalein is added to an aqueous solution of the above compound of B and D? (1 mark)

(B) Following are the dot and cross diagrams of compounds formed by X, Y and Z with Hydrogen (H)







(i) What are the groups of X, Y and Z elements in the periodic table? (3 marks)

(ii) Write down the valency of X and Y elements. (2 marks)

(iii) How do you call the un-bonded electrons in the valency shell of the above atoms? (2 marks)

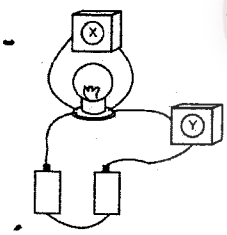
(iv) Draw the Lewis structure of the above molecule formed by Z. (2 marks)

(v) If X is in the 2nd period of the periodic table, identify it and write its symbol. (2 marks)

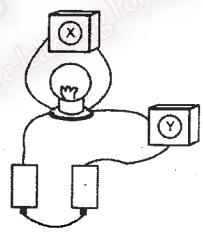
(vi) Z is a diatomic, gaseous elements. Draw the dot and cross diagram of a Z_2 molecule. (3 marks)

(20 marks)

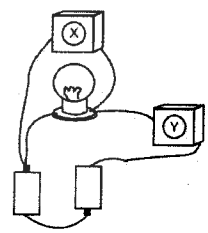
(7) Following are some circuit arrangements done by a group of students under the guidance of the teacher.



(1) Circuit



(2) Circuit



(3) Circuit

(i) Observations of the above arrangements were tabulated. Copy the following table to your answer script and complete it with the observations.

Circuit	Reading of present/absent (X)	Reading of present/absent (Y)	Bulb lights up/not
(1)			
(2)			
(3)			

(3 marks)

(ii) Name X and Y instruments (2 marks)

(iii) Write down the methods that X and Y are connected with the circuits respectively. (2 marks)

(iv) What is your conclusion regarding the above observations? (1 mark)

(v) Explain the way you arrived at the above conclusion. (1 mark)

(vi) Another bulb identical with the above bulbs was given to the students. It was asked to connect with the 3rd circuit arrangement.

(a) Draw circuit diagrams to show two ways of connecting that bulb to the circuit (3). (2 marks)

(b) Resistance of each bulb was found to be 4Ω. Calculate the equivalent resistance in each of the above circuits, in (a) (2 marks)

(vii) Two new dry cells are used in the above 3rd circuit. Resistance of the bulb in it is 4Ω. Calculate,

(a) Reading in X (2 marks)

(b) Reading in Y (2 marks)

(viii) A student told to connect a 4Ω resister instead of the bulb. Draw the colour bands on it using the following codes.

black	- 0
brown	- 1
yellow	- 4

(2 marks)

(ix) Explain the reason for the use of long, thin wires as coil in heating devices. (1 mark)

20 marks

(8) (A) The enormous number of living species on the earth creates a bio-diversity. Classification is needed to study about living organisms.

(i) What is meant by bio diversity? (1 mark)

(ii) Write two advantages of classification of living organisms. (2 marks)

(iii) Mention a difference between a natural classification and an artificial classification. (1 mark)

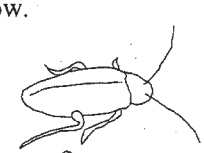
(iv) Name the animal phylum where all are diploblastic (2 cell layers) (1 mark)

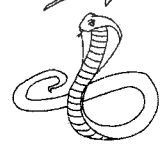
(B)(i) Some of the animals found in the environment are given below.

A – Star fish 

B – Hydra 

C – Snail 

D – Cockroach 

E – Cobra 

Write down the letter/letters of the animals showing each of the following characteristics.

(a) radial symmetry (1 mark)

(b) presence of jointed appendages (1 mark)

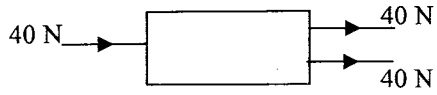
(C) (i) Write two differences between sexual and asexual reproduction. (2 marks)

(ii) Write the asexual reproductive method that gives a large number of plants in a short period. (1 mark)

(D) A force is defined as a push or a pull.

(i) Write two characteristics of a force. (2 marks)

(ii) Following diagram illustrates the application of three forces on an object.

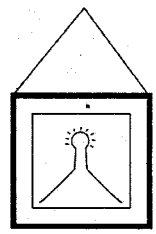


(a) What is the resultant force of these 3 forces? (1 mark)

(b) Mention the direction of the motion in the object due to these forces. (1 mark)

(c) What should be done to keep the object at equilibrium? (2 marks)

(iii) Following is an equilibrium of an object under 3 forces.

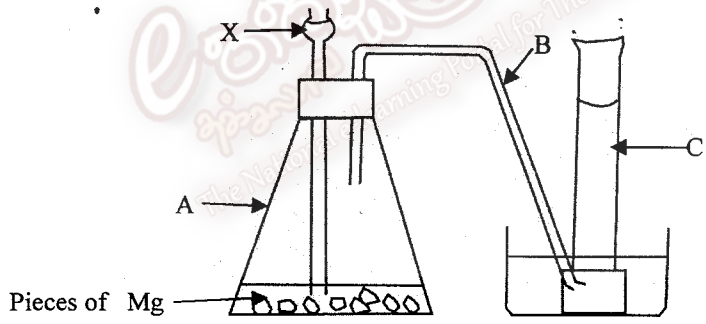


(a) Copy the diagram and mark the forces applied on the object. (2 marks)

(b) Write two characteristics of these 3 forces when the object is at equilibrium. (2 marks)

(20 marks)

(9) A. Following is a practical arrangement used to prepare and collect hydrogen (H_2) gas in the laboratory.



(i) Name A, B and C (3 marks)

(ii) What is added as X? (1 mark)

(iii) Mention the name of the above method used to collect hydrogen gas. (1 mark)

(iv) A balloon filled with hydrogen goes up but a balloon with carbon dioxide goes down in the air. Write down the reason for this difference. (1 mark)

(v) One student told that hydrogen can be used as a fuel. What is the property of hydrogen to be used as a fuel? (1 mark)

(vi) "Using hydrogen as a fuel is eco-friendly". Will you agree with that statement? Explain the reason for your answer. (2 marks)

(vii) Write **another** use of hydrogen gas (1 mark)

B. An object is placed in front of a plane mirror, 5 m distance from it.

(i) Write two characteristics of the image. (2 marks)

(ii) Write two uses of plane mirrors. (2 marks)

(iii) When the object is moved by 2 m towards the plane mirror,

(a) find the distance between the mirror and the image. (1 mark)

(b) find the distance between the object and the image. (1 mark)

(iv) A concave mirror with 4 m radius of curvature (r) was kept in front of the object. Write,

(a) one similarity (1 mark)

(b) two differences (2 marks)

between the images of the plane mirror and concave mirror when the object is 5 m away.

(v) At what distance the object should be placed away from the concave mirror to form a magnified and upright image. (1 mark)

(20 marks)