බස්නාහිර පළාත් අධ්‍යාපන දෙපාර්තමේන්තුව
மேல் மாகாணக் கல்வித் திணைக்களம்
Department of Education - Western Province

වර්ෂ අවසාන ඇගයීම
ஆண்டிறுதி மதிப்பீடு - 2020
Year End Evaluation

ශ්‍රේණිය தரம் Grade	විෂයය பாடம் Subject	පත්‍රය வினாத்தாள் Paper	කාලය காலம் Time
11	**Science**	**II**	**03 h**

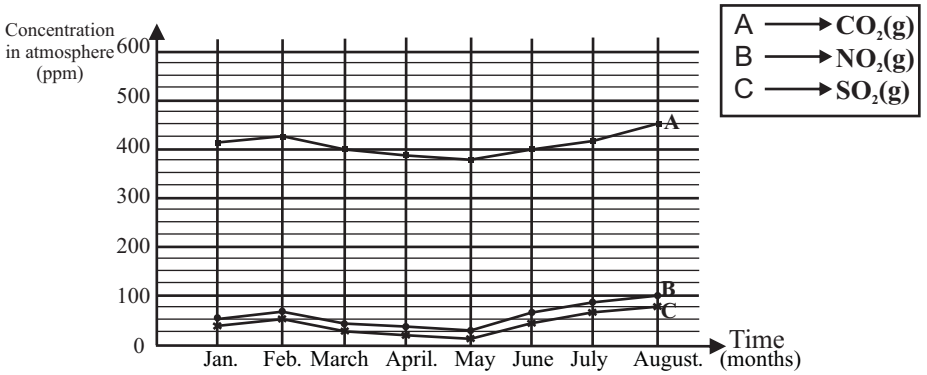
Name :- ..... Index No :- .....

Important :

- Answer **all** question of part **"A"** in the given space, Answer **three** questions of part **"B"** Submit answer.

Part A - Structured Essey

(01) The following graph has been drawn to show the concentration of carbondioxide (CO_2) Nitrogen (N_2) and sulphur dioxide (SO_2) variation in the atmosphere in a main city of a developing country from January to August in 2020.



(i) What is the environmental crisis that has been occured due to the increasing (CO_2) concentration?

.....

..... (1 M)

(ii) How much sulphur dioxide concentration was present in the atmosphere in February?

..... (1M)

(iii) (a) Which gas has caused photo chemical smog?

..... (1 M)

(b) According to the graph which month is more open to photo chemical smog?

..... (1 M)

(iv) Covid - 19 had spread rapidly from March to May. During that period concentraction of gases have decreased. Give one reason for it

..... (1M)

(B) Following table shows the day today activities of X and Y persons.

Activity	Method of X	Method of Y
* Transport	Foot cycle	Car
* Vegetable consumption	From his own garden	Buy from the market
* Fruit consumption	From his own garden	Buy from the market
* Using electrical appliances	Very low	Very high

(i) Who has a high carbon footprint? (1M)

.....

(ii) Who has a short footmile. (1M)

.....

(iii) Give one advantage of short footmile. (1M)

.....

(iv) Write one sustainable agricultural use in gardening. (1M)

.....

(v) Following food chain is found in X's garden.

Grass ⟶ Grasshopper ⟶ Toad ⟶ Snake

If 1000J energy is stored in grass how much energy will reach to the snake? (1M)

.....

(C) Following flow chart shows the organizational levels of the biosphere.

Individual ⟶ Population ⟶ S ⟶ T ⟶ Biosphere

(i) Define 'population'

.....

..... (1M)

(ii) Name S and T organization levels

S.....

T..... (1M)

(iii) Efficiency of the nitrogen cycle is less in an agricultural eco- system than in a forest.

a) Which type of nitrogen ion/s is absorbed by plants from the soil?

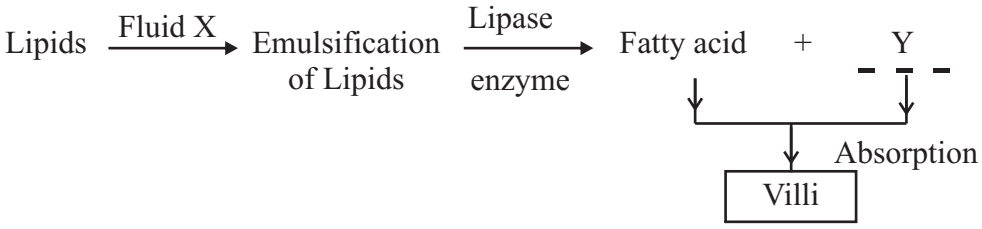
..... (1M)

b) Write a human activity that decreases the efficiency of the nitrogen cycle in an agricultural eco- system.

..... (1M)

(Total 15 M)

(2) (A) The following flow chart shows lipids digest and its end products are absorbed in human digestive system.



(i) What is denoted as X fluid?

..... (1M)

(ii) Which gland secretes Lipase enzyme?

..... (1M)

(iii) What is the end product denoted as Y?

..... (1M)

(iv) Which part of Villi absorb the end products of Lipids?

..... (1M)

(v) Inner lining and mucosa of the stomach can be inflammated due to different reasons.

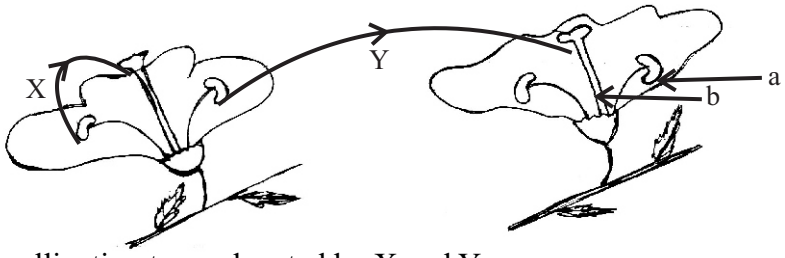
(a) Name the above disease.

..... (1M)

(b) Write a good food habit to avoid the above disease.

..... (1M)

(B) Following diagram shows how pollination occurs in a certain species of a flower.



(i) Name the pollination types denoted by X and Y.

X - .....

Y - ..... (2M)

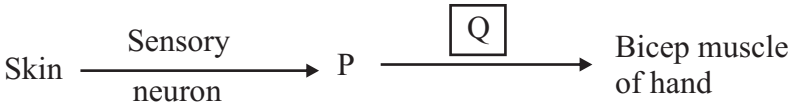
(ii) Which pollination type above creates variations?

..... (1M)

(iii) Gametes form in 'a' structure. Which type of cell division occurs in 'a'?

..... (1M)

(C) **A child moves his hand immediately away when it contacts with a hot surface.** The impulse passes from the receptor to the affector as shown in the flow chart.



(i) Explain the incident in bolded letters scientifically.
..... (1M)

(ii) P is the part of central nervous system and Q is the neuron. Name P and Q.
P - .....
Q - ..... (2M)

(iii) What is the advantage of Myelin sheath formed around an axon?
..... (1M)

(iv) To which type of muscle does the bicep muscle belong?
..... (1M)

(Total 15M)

(03) (A) The following laboratory equipment and substances are place on the working table on a science lab.

- Sucrose ($C_{12}H_{22}O_{11}$)
- Distilled water
- 100cm^3 volumetric flask
- Wash bottle
- Watch glass
- Triple beam balance

Students are advised to make a standard solution using the above things.

(i) Write a use of the following equipments.

Equipment	Use
(i) Volumetric flask	.....
(ii) Triple beam balance	.....

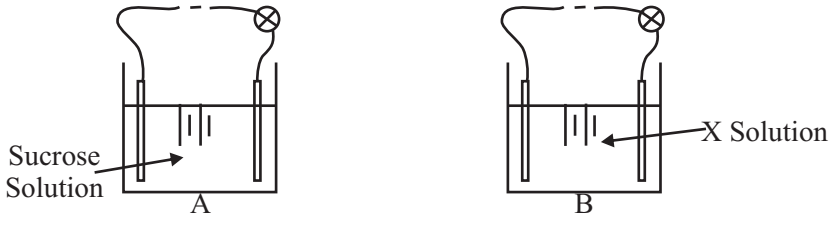
(2M)

(ii) Find the mass of sucrose required to prepare 100cm^3 of 1moldm^{-3} sucrose solution. (C=12, O=16, H=1)
.....
..... (2M)

(iii) How do you dissolve an extra amount of sucrose in a saturated sucrose solution in 30^{o}C
..... (1M)

(iv) What is the raw material and separating technique in manufacturing sucrose?
(a) Raw material .....
(b) Separating technique ..... (2M)

(B) Following apparatus is set using an equal volume of sucrose solution and X solution.



- Bulb lights only in the sett up B

(i) What type of bonds are found in X solution ?
..... (1M)

(ii) Name a chemical compound that can be used as X?

..... (1M)

(iii) Write a strategy that we should take when preparing these solutions to get the above results.

..... (1M)

(C) Urea [$CO(NH_2)_2$] is used in agriculture for Nitrogen deficiency in crops. (C=12, O=16, N=14, H=1)

(i) Find the molar mass of urea.

.....

..... (2M)

(ii) How many moles present in 30g of urea?

.....

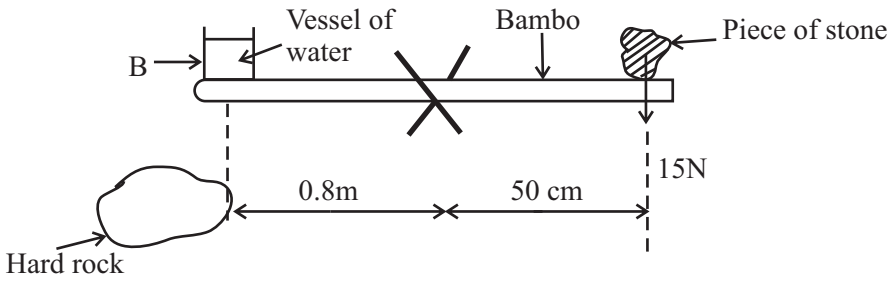
..... (2M)

(iii) Does the temperature increase or decrease when urea dissolves in water?

..... (1M)

(Total 15M)

(4) (A) The following diagram shows a water ghost ("Diya Holmana") prepared by a student. When water is added to B vessel slowly the bamboo stick came to the balance position. The bamboo stick is light in weight and straight



(i) Find the mass of water in vessel B. after disregarding the weight of the vessel and the friction at the turning point.

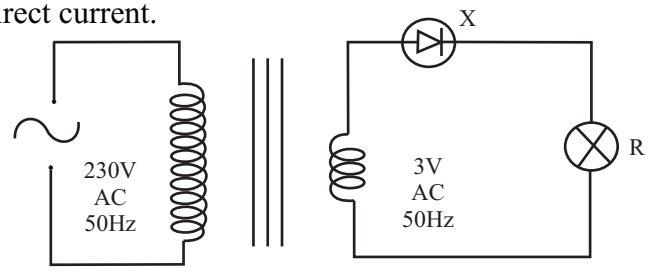
.....

..... (2M)

(ii) When we added more water to vessel B, the corner of the bamboo stick touched the hard rock and made a big noise. What type of mechanical wave is it?

..... (1M)

(B) The following circuit diagram was made by a student to convert alternative current to a direct current.



(i) What is 'X'?

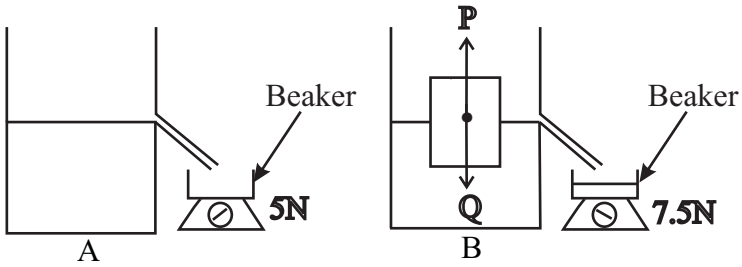
..... (1M)

(ii) Write the function of X.

..... 1M)

(iii) Draw the shape of the following graph when electric current which passes through in the graph below.

(C) The following diagram shows an instance where an object floats on water



(i) Name the forces P and Q.

P -.....

Q -..... (2M)

(ii) Calculate the magnitude of force P.

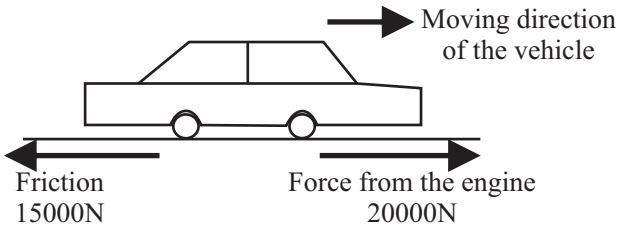
.....

..... (2M)

(iii) What can you tell about the magnitude of P and Q forces?

..... (1M)

(D) The following diagram shows how forces are acting on a moving vehicle.



(i) What is the unbalanced force acting on the vehicle towards the moving direction?

.....

..... (1M)

(ii) Find the acceleration of the vehicle if the mass of the vehicle is 1000 kg.

.....

..... (1M)

(iii) Write a characteristic in vehicle tyres that can be seen to increase the friction.

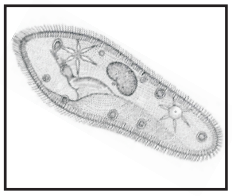
..... (1M)

(Total 15)

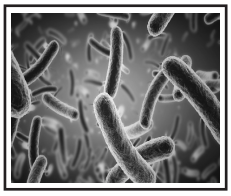
Part B - Essay

☒ **Answer three questions only.**

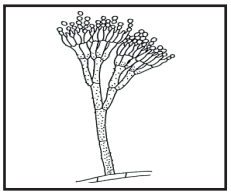
(05) (A) Following figure shows three organisms. Answer the question using the given organisms.



K



L



M

(i) Identify the is organism K. (1M)

(ii) L organism to sensitive to antibiotics. Name the domain that organism L belongs (1M)

(iii) Write a special feature of the above domain. (1M)

(iv) M organism belongs to kingdom fungi

(a) Name the compound that the fungi cell wall is made out of (1M)

(b) Write an economical advantage of kingdom fungi to man. (1M)

(B) Human respiration is a complex process which contains two processes known such as expiration and inspiration

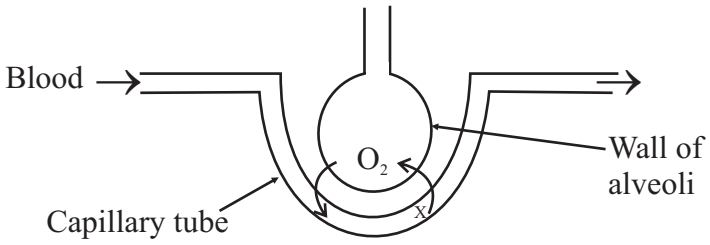
(i) Write a change that happens to inhaled air when it is passing through the nasal cavity.

(ii) What happen to the following structures in the chest cavity during the process of inhaling?

Structure	Change happen during the inhalation
(a) Sternum	
(b) Diaphragm	

(1x2= 2M)

(iii) Following diagram shows how air exchange occurs in the alveoli sacs in the lungs

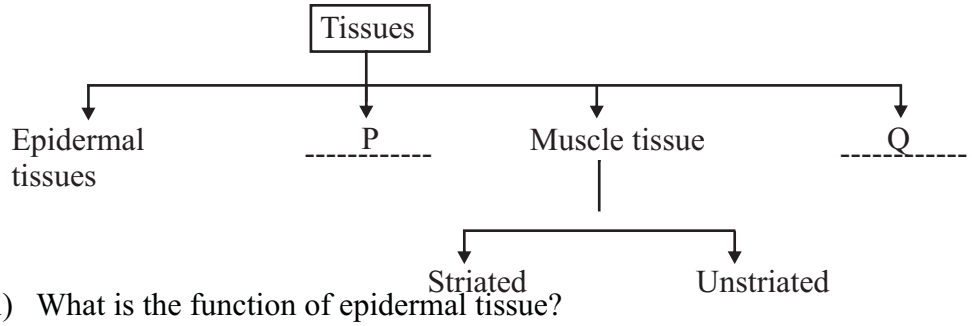


(a) Name the gas. X (1M)

(b) Which blood cell transport O_2 gas and name the pigment present in that blood cell? (2M)

(iv) 200m distance runner abandoned the event due to a muscle pain in his leg. Briefly explain the reason for it. (2M)

(C) Following diagram shows the summary of human tissues.

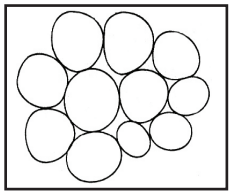


(i) What is the function of epidermal tissue? (1M)

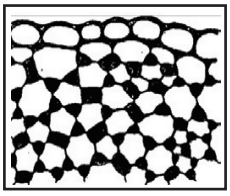
(ii) Name is P and Q tissues (2M)

(iii) What is the involuntary striated muscle cell? (1M)

(iv) Name is the following paint tissues



X

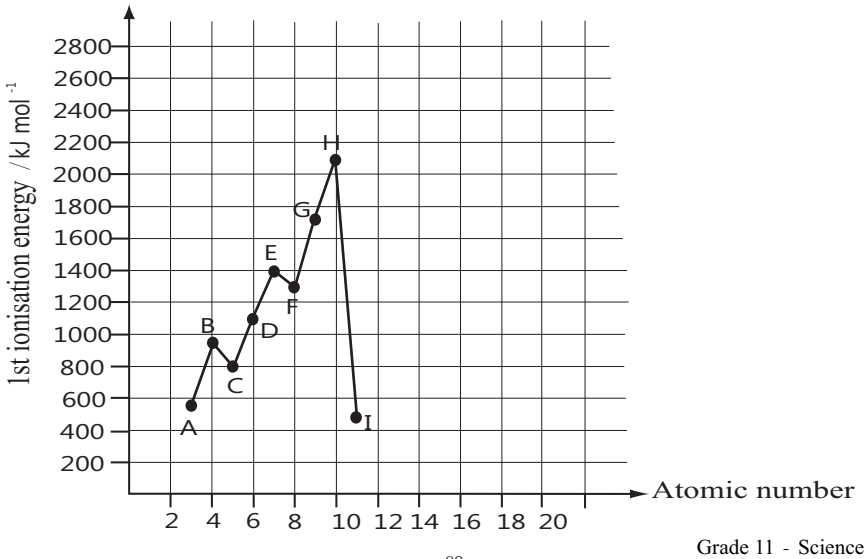


Y

(2M)

(v) To prepare the microscopic slide of Y which part of the plant can we use? (1M)

(6) (A) The graph illustrate first ionization energy of few elements of atomic number 3-11 in the periodic table. Answer the following questions using the given graph



(i) Define first ionisation energy. (1M)

(ii) Write the electronic configuration of element H (1M)

(iii) Write the

(a) period

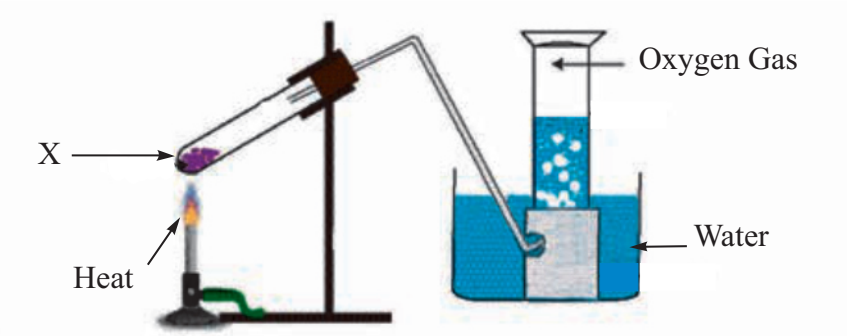
(b) group of element E (2M)

(iv) Which element has the highest electro-negativity? (1M)

(v) What is the allotrope of D which can conduct electricity? (1M)

(vi) How can element I be stored? (1M)

(B) Naturally Oxygen element stays as homo-atomic molecules. Following setup is used to produce Oxygen gas.



(i) What is the chemical X? (1M)

(ii) Write the type of chemical reaction which occurs when heating chemical X (1M)

(iii) What is the method used to collect Oxygen gas in the above set-up. (1M)

(iv) Write two uses of the oxygen gas. (2M)

(v) Find the number of molecules present in 48g of oxygen (O=16) (2M)

(C) Three labels were missing in solutions in the science laboratory. They were named as A, B and C. One of these solutions are HCl and other one is NaOH.

- When phenolpthalene added - solution A converts to pink and other two remains colourless.
- When PH paper is added to C, it gives the colour relevant for PH 7

(i) What is the acidic solution among A, B and C? (1M)

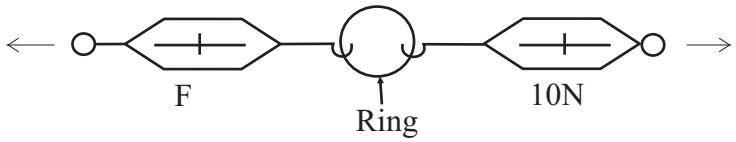
(ii) What's the colour change that we can observe by adding PH paers to HC1 acid? (1M)

(iii) What are the two type of ions present in the aquous solution of HCl? (2M)

(iv) Find the PH value of salt that is produced when equal volumes and concentration of HCl and NaUH reacts. (1M)

(v) What is the name given to the above (vi) type of reactions? (1M)

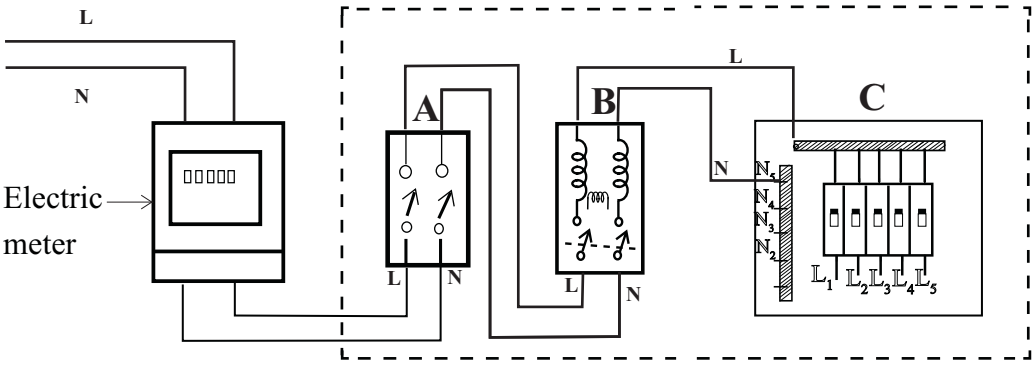
(07) (A) Following diagram shows two newton spring balances when force is exerted on a ring



(i) If the ring does not move find the resultant force acting on the ring. (1M)

(ii) write two characteristics of the forces when they are in equilibrium (2M)

(B) The diagram shows the consumer unit and the electric meter in a modern domestic circuit



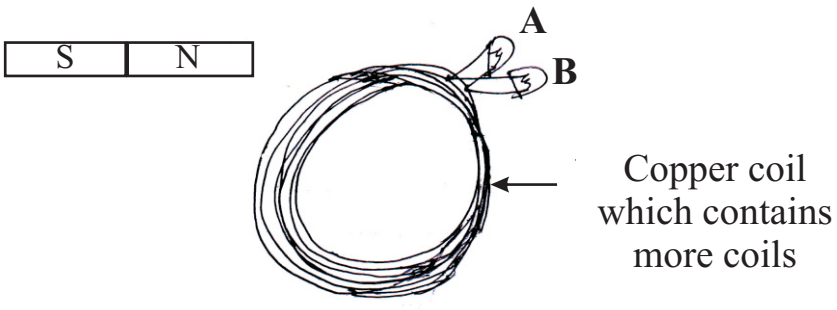
(i) Find the voltage between L and N wires. (1M)

(ii) Name A and B. (2M)

(iii) Write the function of C. (1M)

(iv) The power 40w electric appliance is connected to a domestic circuit. It is operated 30min per day for 30 days. How much units were used for 30 days. (2M)

(C) The following diagram illustrates an activity done by a student for electro magnetic induction



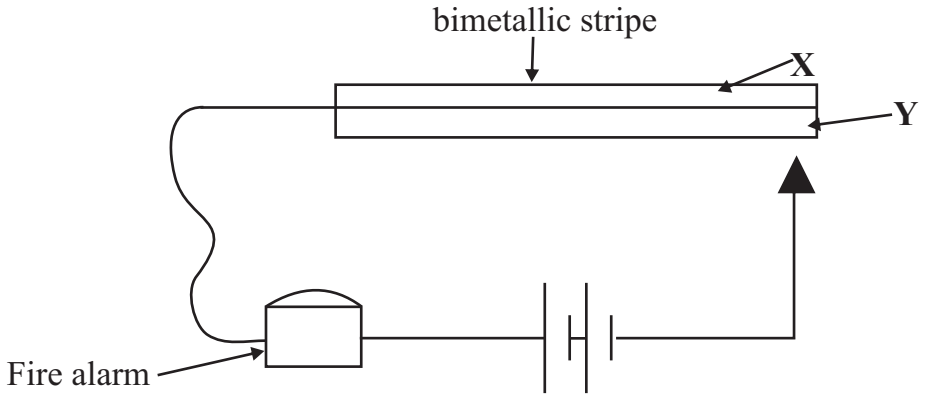
A and B LED bulbs are connected by changing terminals their.

(i) What is the observation when a powerful magnet is inserted enters to a coil and removed from the coil? (1M)

(ii) According to the above observation which type of electric current induce in the copper coil? (1M)

(iii) Write a method to increase above electric current induce using a copper coil. (1M)

(D) The following diagram illustrates an automatic fire alarm circuit . When a fire occurs bimetallic spripe expands the and circuit completes.



(i) Which metal out of X and Y expands more to complete the circuit? (1M)

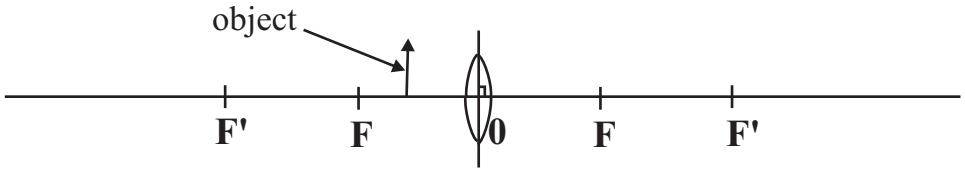
(ii) What is the method used to transfer heat in bimetallic stripe? (1M)

(iii) When bimetallic stripe cools heat energy looses. How is heat lost? (1M)

(iv) Name and electronic appliance which use bimetallic strips. (1M)

(v) What is the advantage of using steam compared to hot water when cooking food? (1M)

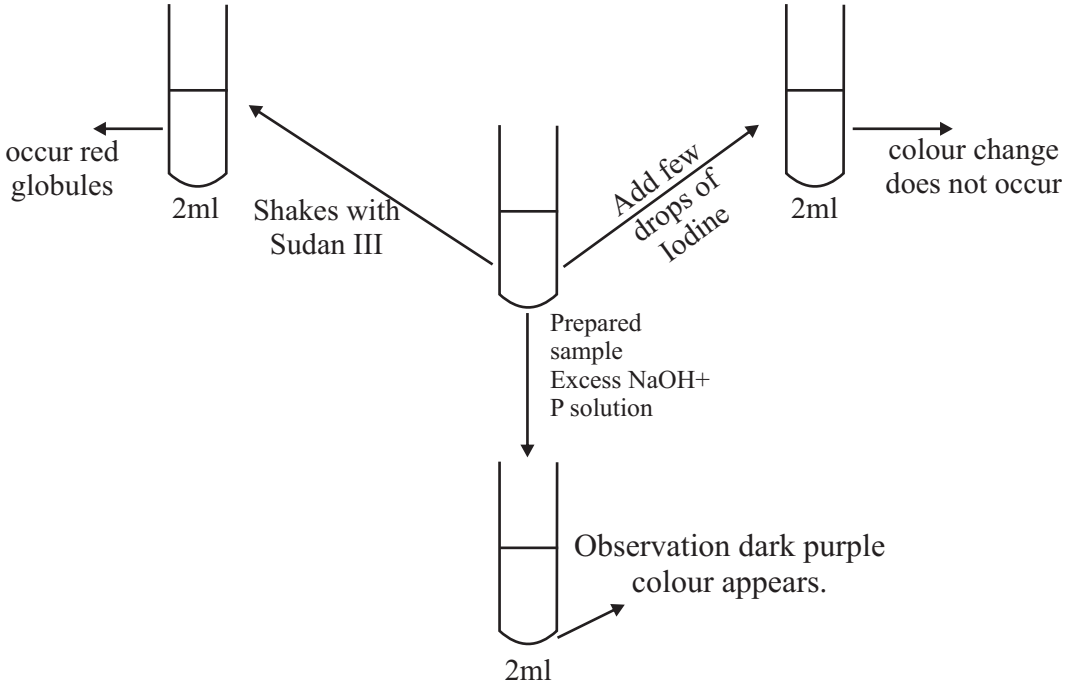
(E) Following illustration show a biconvex lence use to observe an image of the candle



(i) Draw a correct ray diagram (2M)

(ii) Name an instrument which uses the above situation (1M)

(08) (A) A group of students went to identify organic compounds in a food sample. They have mixed the food with water and 2ml of the sample were take and put tem in three test tubes as follows



(i) Name organic compounds in the food. (1M)

(ii) What is the solution labelled as P? (1M)

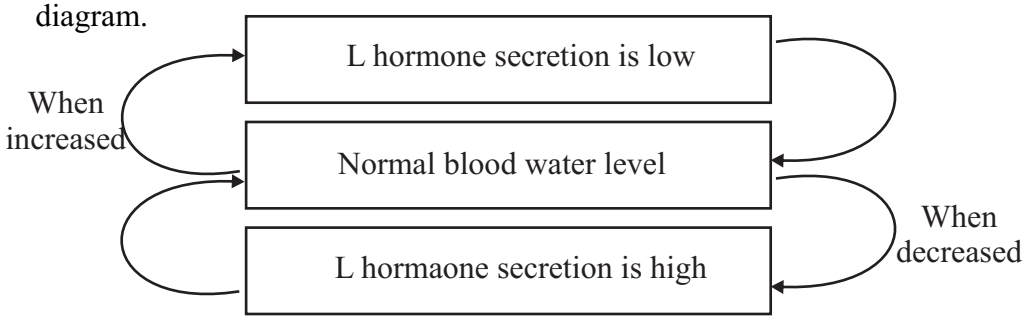
(iii) Name the vitamin defect which creates bito spots in the eye. (1M)

(iv) Special features of water is important to carry the life processes of living organisms.

(a) "Water has cohesive and adhesive forces" What is the meaning of this? (1M)

(b) How does the solvent nature of water affect the existance of fish in water? (1M)

(B) The way of homeostasis of water in human body is illustrated in the following diagram.



(i) Name the hormone denoted by letter 'L'. (1M)

(ii) What is the chemical compound present in kidney stones? (1M)

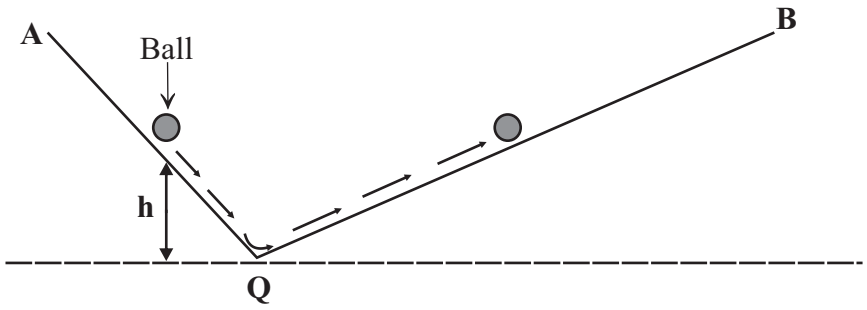
(iii) Write two reasons which cause kidney stones. (2M)

(C) The running event starts by a signal given using a pistol. This incident is observed by a student from far.

(i) Mention the reason for the time difference to see the smoke and hear the sound. (2M)

(ii) It take 0.4S to hear the sound after seeing the smoke. Calculate the distance between the student and the person who gives the signal. (In air sound travel 330ms^{-1}) (2M)

(D) A and B two inclined planes are placed as follows. Then a glass ball is released from 'h' height from A inclined plane. Path of the ball given in the diagram.



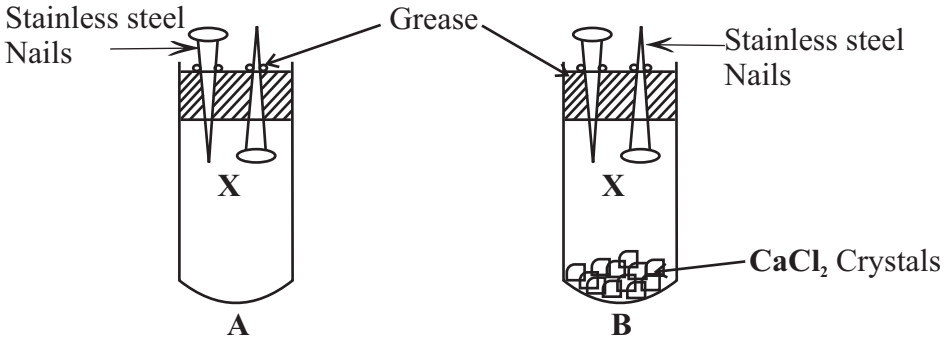
(i) In which part of the inclined plane does the velocity of the glass ball increase? (1M)

(ii) In which part of the inclined plane is kinetic energy high in the ball? (1M)

(iii) Potential energy of the ball at P is 100J. Mass of the ball is 500g. Find the velocity of ball at Q. (2M)

(v) If inclined plane is roughed what happens to the velocity of the ball in III? Give reasons. (2M)

(9) (A) Following setup was orranged to find the factors necessary for rusting.



(i) Which factor needed for rusting is checked by the above experiment? (1M)

(ii) What is the function of $CaCl_2$ present in tube B? (1M)

(iii) Write the observation after few days in the X parts of nails present in.

(a) A tube -

(b) B tube - (2M)

(iv) Grease contains carbon and Hydrogen. Name the chemical group that grease belong to. (1M)

(B) Chemical formula of ethene is C_2H_4 Polythene is made by polymerization of ether.

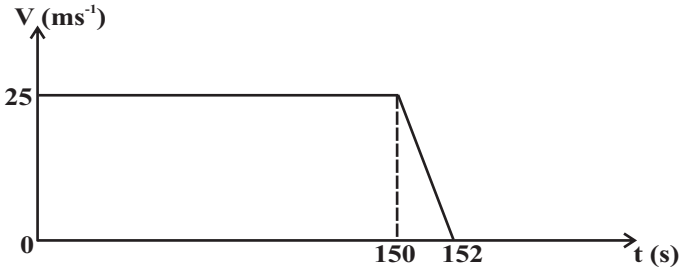
(i) Draw a repeating unit of polythene. (1M)

(ii) Write two special characteristics of polythene. (2M)

(iii) Write a name of the natural polymer. (1M)

(iv) Write an environmental problem caused due to high usage of polythene. (2M)

(C) Following velocity - time graph is relevant to a straight line motion of a motor vehicle.

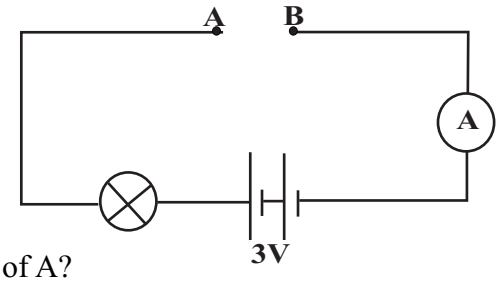


(i) What is the time duration in which the vehicle travels in a uniform velocity. (1M)

(ii) Mass of the vehicle is 500kg. Find the momentum of it at uniform velocity. (2M)

(iii) In 150th second driver saw a tortoise crossing the road within a 30m distance. He applied break and stopped the vehicle within 25S. Did the vehicle hit the tortoise? Demonstrate by calculating. (2M)

(D) Following circuit diagram is set by a student to check the factors that affect resistance. The A and B gap in the circuit is connected connect using an equal length (5cm) and equal diameter copper and Nichrome wires separately and the brightness of the bulb is observed.



(i) What is the function of A? (1M)

(ii) Brightness of the bulb increase in the circuit in which occassion

(a) Copper wire connects A and B

(b) Nichrome wire connects A and B (1M)

(iii) What is the reason for above (ii) observation? (1M)

(iv) Resistance of the copper wire is 10Ω and resistance of the bulb is 5Ω. Find the electric current passing through the circuit. (2M)