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மேல் மாகாணக் கல்வித் திணைக்களம்
Department of Education - Western Province

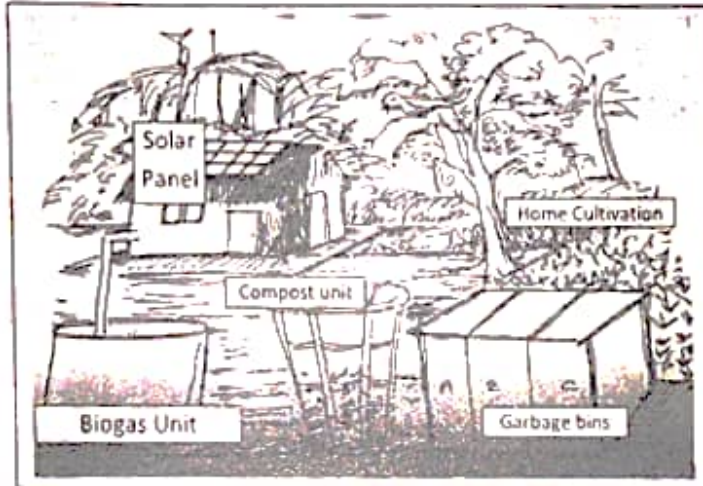
වර්ෂ අවසාන ඇගයීම
ஆண்டு இறுதி மதிப்பீடு - 2021
Year End Evaluation

පන්ති ශ්‍රේණි Grade	11	විෂයය Subject	Science	පත්‍රය විෂය Paper	11	පැය විෂය Hours	03
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Part A

- ❖ Answer the four questions in part A, in the space provided
- ❖ Of the five questions in Part B answer three questions only.

01.



(A) Given above is a diagram of a garden which is developed by using environmental management.

(i) Write two examples to show the garden developed in a environmental friendly manner (Marks 2)

(ii) Write two advantages of using compost(carbonic fertilizer) in the garden (Marks 2)

(iii) Vessel C, is used to collect plastic & polythene. Write suitable labels for vessel A & B. (Marks 1/2X 2)

(iv) Write down two renewable energy resources which are used in the above figure. (Marks 1/2X 2)

(v) Food mileage could be minimized by the cultivation of all the crops which are need to house. State one advantage of that. (Marks 1)

(vi) What type of microorganism is used to produce bio gas? (Marks 1)

(B) Follwing food chain can be seen in the above garden.

plants → Caterpillar → Coucal (Atikukula) → Eagle

(i) What is the secondary consumer in the above food chain? (Marks 1)

(ii) 100000J of energy contain in plant leaves. Calculate the energy flow to the eagle (Marks 1)

(iii) To which biological process waste the higher percentage of energy in energy dissipation (Marks 1)

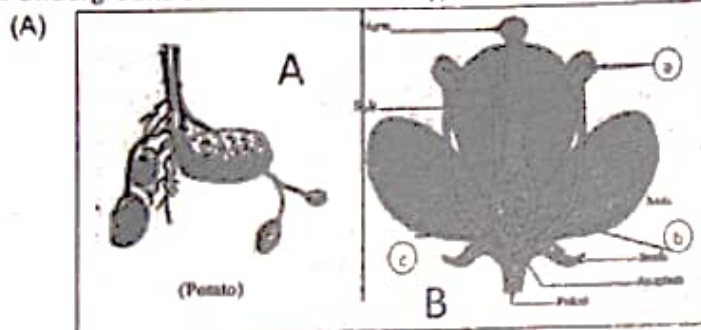
(C) (i) How does is biological fixation occurred in Nitrogen cycle? (Marks 1)

(ii) Green colour algae layer is grown on the surface of a reservoir because of a chemical compound produced in industrial fixation. What is the name given to that process? (Marks 1)

(iii) Among the Pseudomonas & Nitrobacter, name the denitrification bacteria? (Marks 1)

(iv) What is the reason for leguminous plants grow even in soil lack in nitrogen? (Marks 1)

02. Underground stem of Potato and typical flower are shown as A and B respectively in the diagram.



(i) Name the underground stem in potatoes (Marks 1)

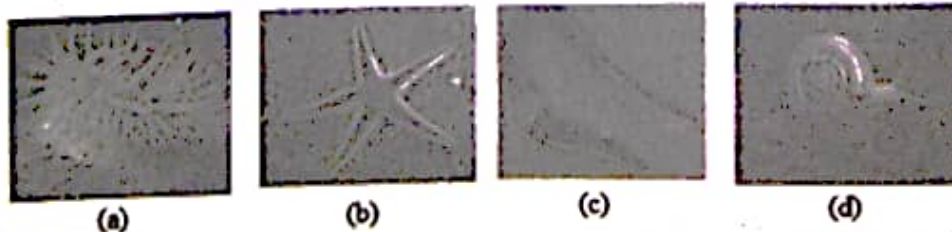
(ii) Write two differences between vegetative propagation and propagation occurs using a flower (Marks 2)

(iii) What type of cell division is occurred in part "a" in the flower? (Marks 1)

(iv) When add a drop of Iodine solution to a piece of potatoes it turns into purplish blue. What is the major nutrition in potatoes? (Marks 1)

(v) What type of tissue could be seen in a piece of potato under light microscope? (Marks 1)

(B) Select the suitable letter of invertebrate a to d according to the characteristics given below.



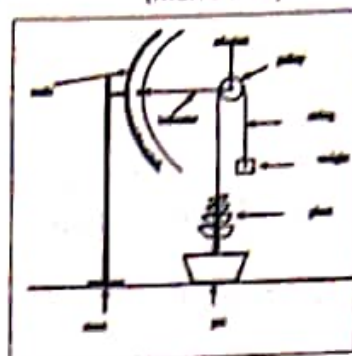
(i) All are marine

(ii) Show different morphological forms

- (iii) Have a muscular foot
- (iv) body is divided into segments internally and externally.....
- (v) Locomotion occurs in using tube feet

(Marks 1x 5)

- (C)
- (i) What is the apparatus in this picture?



..... (Marks 2)

- (ii) Write two protective method that should be taken when it used

..... (Marks 2)

03. (A) The attractive forces are placed among the atoms or ions, resulted by the rearrangement of electrons in the valence shell, for stabilising the atoms of elements.

- (i) What is the common name of these attractive forces? (Marks 1)

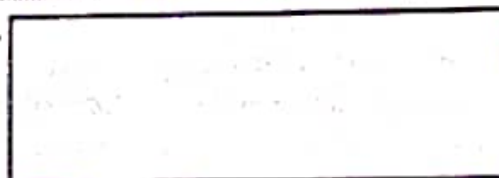
- (ii) Atomic number of X is 11. Write the ionic half equation to form cation from x atom. (Marks 1)

- (iii) What is the type of chemical bond present in X atom with Cl atom? (Cl = 17) (Marks 1)

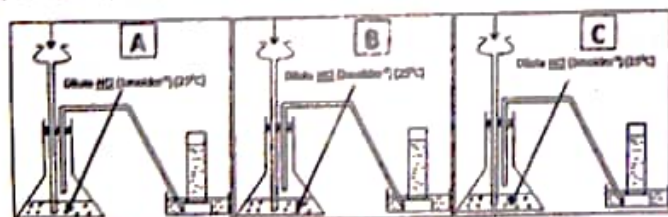
- (iv) Write two physical characteristics of the compound, which is formed in the reaction between X with Cl.

.....(Marks 2)

- (v) In the given box, draw the Lewis structure of molecule, which is formed with the combination of Carbon and Chlorine (C= 6, Cl= 17)



(B) Following figures of 3 apparatus are used to prepare 100cm³ of gas in the laboratory.



- (i) In which apparatus produce 20cm³ of H₂ gas in the least time duration? (Marks 1)

- (ii) Write the balance equation for the reaction of Zn with HCl. (Marks 1)

- (iii) What factor that affects the rate of reaction can be shown by each of the following pairs of apparatus? a) A and B.....

- b) B and C..... (Marks ½ x2) (Marks 1)

(iv) Write two uses of hydrogen gas

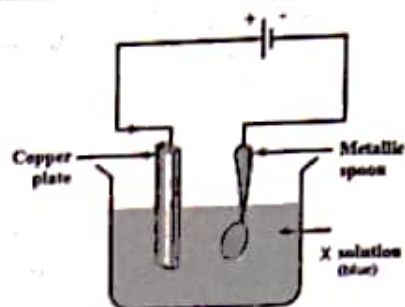
(C) Following figure is used for electroplating

(i) What can you see on iron spoon? (Marks 1)

(ii) What is the chemical formula of X? (Marks 1)

(iii) Write the half reaction occurring at the anode. (Marks 1)

(iv) Write another use of electrolysis (Marks 1)

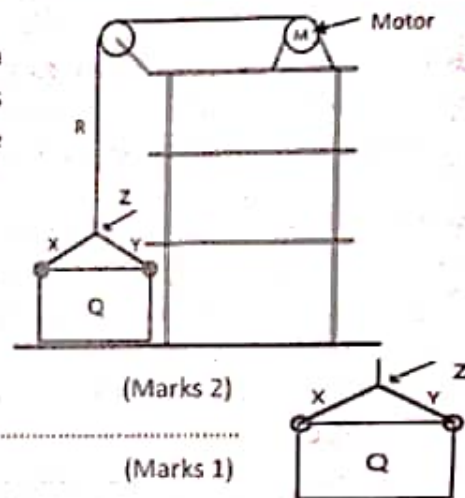


04. (A) The following diagram shows the simple machine use to raise building materials to the upper store in a construction site. The box Q is full of sand and mass of it is 10 Kg. box Q fixed to R rope using X and Y strings at the place Z. M motor gives force to raise the box Q. ($g = 10\text{ms}^{-2}$)

(i) Mark the corresponding forces exert on the box Q, when it slightly raise upward (Marks 2)

(ii) Write two conditions that should be satisfied to be in equilibrium of box Q when it hangs at Z (Marks 2)

(iii) What is the tension of R string? (Marks 1)



(B) M motor is connected to 230V main current.

(i) The motor has marked as 1000W. What is the meaning of that? (Marks 1)

(ii) 0.5 minutes takes to raise the box Q, upwards. Calculate the amount of electric energy it consumed? (Marks 2)

(iii) Calculate the potential energy of box Q, lifting to 10m upward? (Marks 2)

(C) The following table shows the variation of velocity of an object falling freely under gravity with time.

Time (s)	0	1	2	3	4	5
Velocity(ms^{-1})	0	10	20	30	40	50

(i) Plot the velocity-time graph according to above information (Marks 1)

(ii) What is the height that it fell from? (Marks 2)

(iii) Mass of that object is 0.5kg. Calculate the momentum of the object when it reaches the ground. (Marks 2)



Part B Essay

❖ Answer only three questions from the question No 5,6,7,8 and 9

05.(A) The following picture shows the cricketer who is ready to hit the ball. During that time the following changes occur in his body.

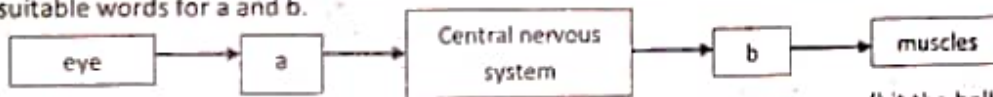
- (a) increase respiratory rate.
- (b) increase heart beat
- (c) increase the blood supply to the muscles
- (d) high sweat flow



(i) What is the word used to explain the coordination between different organs during hitting the ball? (Marks 1)

(ii) What are the two types of actions stated in (i) above? (Marks 2)

(iii) The path that impulses are sent from seen the ball and hitting the ball is shown below. Name the suitable words for a and b.



(see the ball)

(hit the ball) (Marks 2)

(iv) What is the responded part of brain to increase the rate respiration & increase heart beat? (Marks 2)

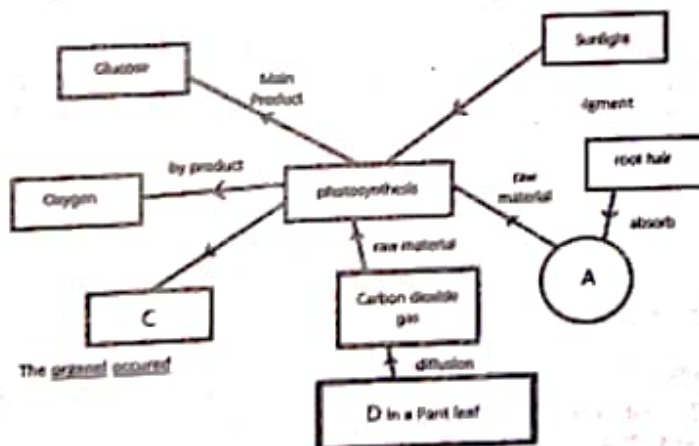
(v) Write the type of muscle in hands & legs? Write one difference between cardiac muscle & the type of muscles in legs. (Marks 1)

(vi) The energy need to muscle is produced by oxidation of glucose. Name the cell organelle that reaction takes place. (Marks 1)

(vii) What is the hormone that secrete instantly to the blood when cricketer is very close to a run out? (Marks 1)

(viii) According to the classification of tissues to which type of tissue does blood belong? (Marks 1)

(B)



(i) Name the suitable words for letters A to D (Marks 1/4)

(ii) Write two environmental importance of photosynthesis. (Marks 2)

(C) Energy is produced by oxidation of glucose & oxygen is supplied by respiratory surfaces.

(i) Explain the action of inter-costal muscles & curvature of diaphragm when inspiration & expiration take place. (Marks 1/4)

	Inspiration	Expiration
Inter-costal muscle		
Curvature of diaphragm		

(ii) Write two adaptations of the wall of alveoli for efficient gas exchange. (Marks 2)

(iii) What are the other two excretory organs except lungs in humans? (Marks 2)

06. (A) Several methods are used to separate components from mixtures. The following flow chart shows the separating of some components from mixtures.

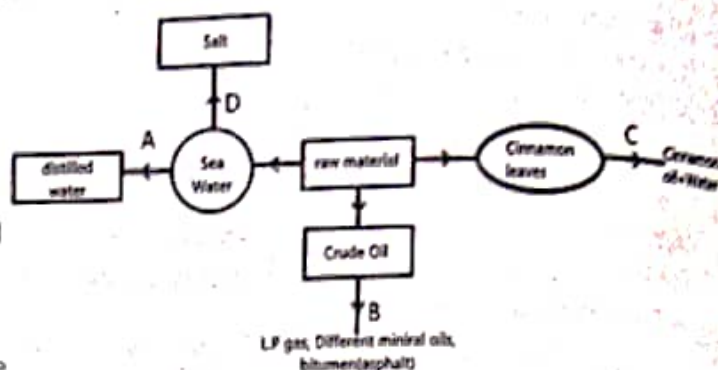
(i) Define the mixtures (Marks 1)

(ii) Name A and B separating methods. (Marks 2)

(iii) L P gas is a mixture of propane and butane. Draw the structural formula of propane. (Marks 1)

(iv) What is the component precipitate in first tank, in the extraction of salt from sea water? (Marks 1)

(v) Describe the reason for not mixing cinnamon oil with water. (Marks 2)



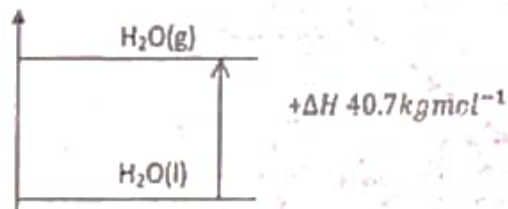
(B) 0.5 g dm^{-3} (m/v) NaCl solution is for prepared treating some patients.

(i) Write down in three steps, how to prepare 1 dm^3 of a 0.5 g dm^{-3} of NaCl solution. (Marks 2)

(ii) Calculate the mass of NaCl required to prepare 500 cm^3 of a 0.5 mol dm^{-3} solution. (Marks 2)

(iii) State one method that could be used to increase the solubility of NaCl in water. (Marks 1)

(C) Energy level diagram given below shows, the energy change of 100°C of water vapour under atmospheric pressure.



(i) What type of change is this? (Marks 1)



(ii) According to the above energy level diagram, is this change exothermic or endothermic? (Marks 1)

(iii) Are the following reactions exothermic or endothermic?

(a) decomposition of limestone (b) cellular respiration (Marks 2)

(iv) 50 cm^3 of a NaOH solution is mixed with 50 cm^3 of an aqueous HCl solution.

Then the temperature of the mixture is increased by 10°C

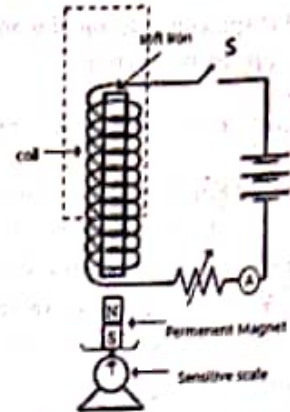
(Specific heat capacity of water is $4200 \text{ J kg}^{-1} \text{ C}^{-1}$ & density of water is 1 g cm^{-3})

Calculate the heat change occurred during the above reaction? (Marks 2)

(v) Write two assumptions you made in the above calculation? (Marks 2)

07.(A)

The following set up is used to find magnetic field due to an electric current flows through a coil.

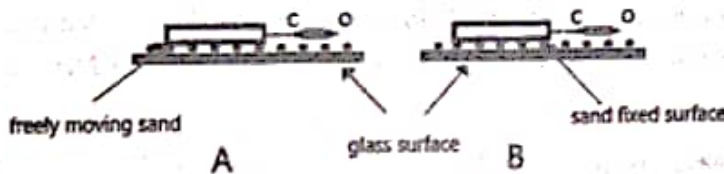


- (i) When the S switch is on, what is the change that can be seen in the place which is circled by dotted line? (Marks 1)
- (ii) When the S switch is on reading of sensitive scale is increased. State the reason. (Marks 1)
- (iii) What could be said about the reading of sensitive scale, if the number of turns of the coil is increased? (Marks 1)
- (iv) What is the function of device named as R? (Marks 1)

(B) There are moving parts in many tools & machines used for day today activities. The friction of these devices causes parts of the machines to wear out.

- (i) Mention a method of reducing friction. (Marks 1)
- (ii) Name 2 types of energy that are produced as a result of friction. (Marks 2)

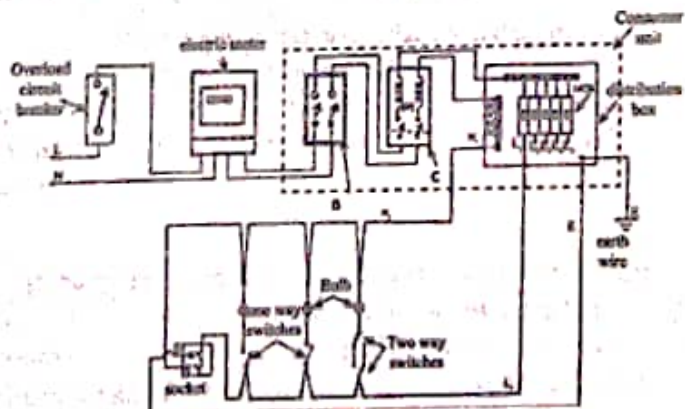
(iii)



- (a) This one has the higher reading in spring balance, when piece of wood forward pulls slowly to the forward? (Marks 1)
- (b) State the reason for above (a) answer (Marks 1)

(C)

This is shown the sketch of a home electric circuit



- (i) Draw a graph for the variation of current supplied to the home electric circuit with time. (Marks 2)
- (ii) Name B and C (Marks 2)
- (iii) Ten 100w bulbs are used for 5 hours daily. Calculate the number of units used up in 30 days. (Marks 2)

(D) This diagram shows a man floating on a water reservoir using an air filled balloon.



- (i) The depth of a reservoir is 10m. Calculate the pressure at the bottom of the pond due to the water. (density of water = 1000kgm^{-3} , $g = 10\text{ms}^{-2}$) (Marks 2)

(ii) Displaced volume of water is 0.05m^3 as a result of the man & the air filled balloon. What is the upthrust exerted? (Marks 2)

(iii) Write an application of the atmospheric pressure in day to day life. (Marks 1)

08. (A) Chromosomes in the nucleus are differ in shapes and size. The number of chromosomes in nucleus is constant in species.

(i) How many chromosomes are there in a body cell of a human? (Marks 1)

(ii) What is the name used to identify a pair of chromosome that are arranged to the same sequence of characters. (Marks 1)

(iii) Define the gene. (Marks 2)

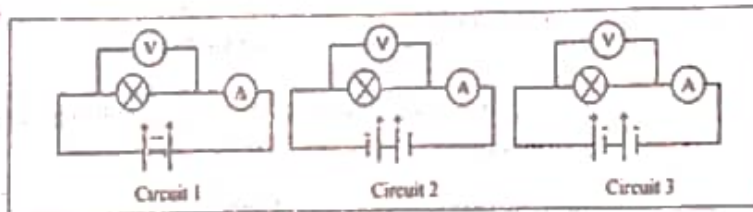
(iv) Name the disorder that occurs due to a mutation in a gene responsible for production of haemoglobin. (Marks 1)

(v) Red-Green colour blindness is the most common sex linked inherited disease. The reason for this disease is a recessive gene in X chromosome. $\begin{matrix} C & + & c \\ x & & x \end{matrix}$ is the genotype of a carrier mother. Genotype of a healthy father is $\begin{matrix} C & + & \\ x & & y \end{matrix}$. Write a suitable diagram to show inheritance of colour blindness of their children. (Marks 3)

(vi) Write two examples for using gene technology in food and agricultural field. (Marks 1/2x2)

(vii) Briefly explain the importance of meiosis in human evolutionary process. (Marks 1)

(B) This diagrams shows three circuits that are made by three students using two dry cells, a bulb, a voltmeter and an ammeter



(i) Which bulb does light up in the above circuits? (Marks 1)

(ii) What is the reason for not lighting other bulbs in other circuits? (Marks 1)

(iii) Write the method of connecting voltmeter and ammeter to the circuit respectively. (Marks 2)

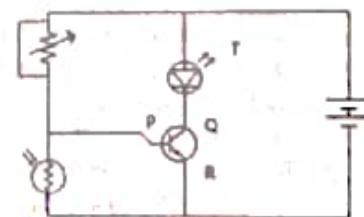
(iv) Voltmeter reading is 3V and ammeter reading is 1A at the circuit that answered above(i). Calculate the resistance of the bulb. (Marks 2)

(C) This electronic circuit is made by grade 11 students to light automatically at night.

(i) What is the device labeled as T? (Marks 1)

(ii) Name the terminals marked P, Q and R in the transistor. (Marks 2)

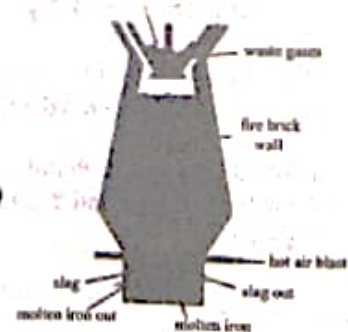
(iii) What is the function of the transistor in this circuit? (Marks 1)



09. (A) This figure shows the cross section of a blast furnace which is used to extract iron.

(i) What is the other raw material which is not mentioned here? (Marks 1)

(ii) Which gas reduces the haematite in the blast furnace? (Marks 1)



(iii) Write the balanced chemical equation that caused to increase temperature up to 1800°C in blast furnace. (Marks 2)

(iv) What is the advantage of floating slag on molten iron? (Marks 1)

(B)

^3_1Q

$^3_{17}\text{P}$

$^3_{11}\text{R}$

$^{31}_{15}\text{X}$

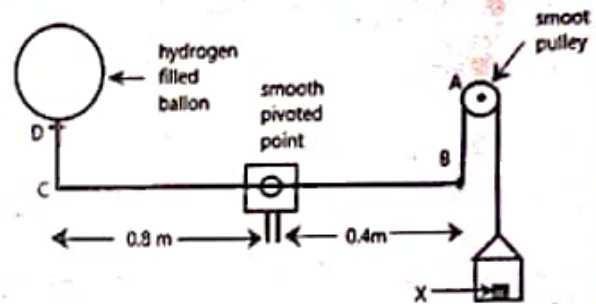
^2_1Y

Given above are some elements written in standard way. Answer the following questions using given symbols. (Here, the given symbols of the atoms)

- (i) Select the pair of isotopes. (Marks 1)
- (ii) Write the period & group of the element X. (Marks 2)
- (iii) Which element has the highest electro negativity among P, R and X. (Marks 1)
- (iv) Of the above elements which element react speedily with water. (Marks 1)

(C) As shown in this figure, a uniform rod kept in equilibrium.

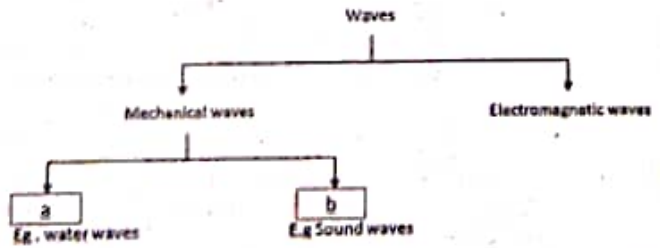
- (i) Mass of X is 100g. what is the weight of X? ($g = 10\text{ms}^{-2}$) (Marks 1)
- (ii) If the mass of strings and friction of the above system are zero. Calculate the exerted force by the hydrogen filled balloon. (Marks 2)



- (D) The following observations were done by a student using different mirrors to observe closer object.
- a - smaller than the object & closer
 - b - same in size as the object & same distance
 - c - image larger than the object

- (i) In which occasion a convex mirror is used? (Marks 1)
- (ii) What is the lens that can be used to get same observations like mirror C? (Marks 1)
- (iii) Represent with a ray diagram, the way in which an image is formed in C. (Marks 2)

(E) Waves carry energy from one point to another. Waves carry energy with the present of particles or without the particles,



- (i) Name the above a and b waves (Marks 1/2x2)
- (ii) The following are some applications of electromagnetic waves. Write down the suitable types of waves for the applications.
 - (a) Used to sterilize utensils used for food & surgical instruments.
 - (b) Used to send signals to television sets from remote controls
 - (c) Produce vitamin D in the human body.
 - (d) Used in RADAR systems mobile telephones & some kind of ovens. (Marks 1/2x4)