

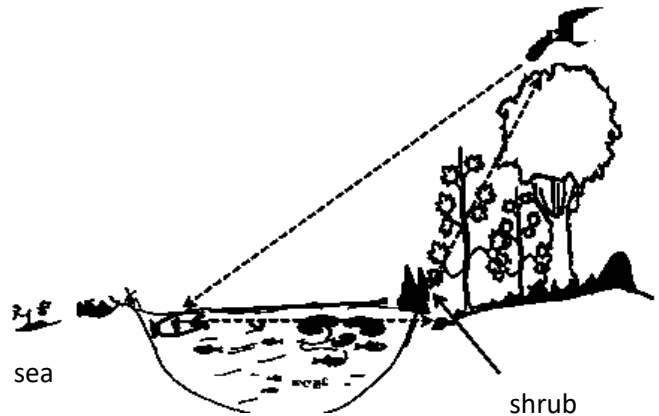
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❖ **Instructions:**

- **This question paper contains part A and B.**
- **Answer all the questions in part A, in the space provided.**
- **Answer only 3 questions in part B.**
- **Attach the answer script of part B with part A and hand over.**

01. Below picture shows eco system of a lagoon

The bird on the tree flew straight towards the fish to catch it and flew back to the small shrub on the bank before it reaches to its initial position on the tree. The distance in between shrub to fish is 10m, shrub to branch of the tree 6m and branch to fish is 12m. write answer for given questions.



A)

1) Calculate the total distance of bird when it reached back to the branch after catching fish?

.....  
.....

2) Find the velocity of bird if it took 3s to catch fish by flying straight from branch to the fish.

.....  
.....

3) What is the displacement of Bird after it reached to the initial position with fish?

.....  
.....

4) Find the acceleration of bird. If mass of bird and fish is 0.5kg and it applied 10N horizontal force for flying with fish.

.....  
.....

B) i. What is the most abundant salt present in lagoon water?

.....

ii. Name the type of bond in between one molecule of that salt?

.....

iii. You have found the metal present in that salt. Write a physical property of it.

.....

iv. Name a type of gas present in the atmosphere above the lagoon and mention one occasion use that gas industrially.

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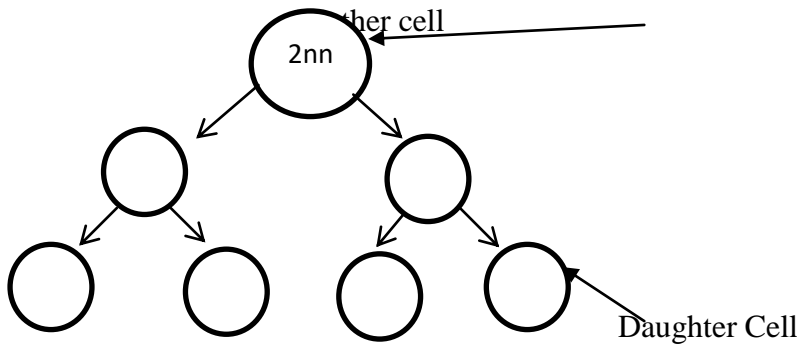
C) i. Name the protein compound that contain in feathers of birds.

.....

ii. What is the compound of proteins which involve in co-ordination and homeostasis.

.....

iii. The process of production of eggs inside the fish body is given below. Its start from a ovule mother cell. Fill the following chart.



02. Type of food contained in the refrigerator are given below.



Honey	Spinach leaves
Eggs	Beans
Curd	Ripen banana

i) Name two main organic compounds present in living matter other than Nucleic acid.

.....

ii) Write a food for each mostly abundant organic compound by selecting above items you mention above.

Organic compound

Mostly abundant food item

.....

.....

iii) Name amonosacchandes present in honey.

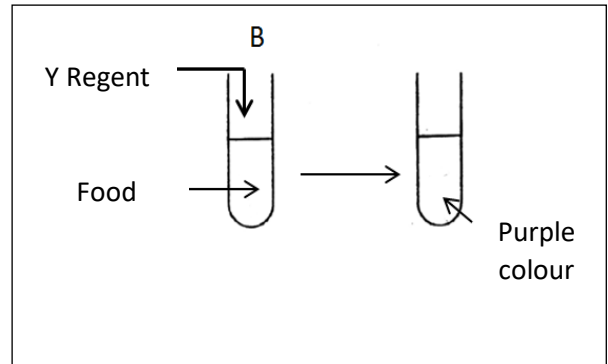
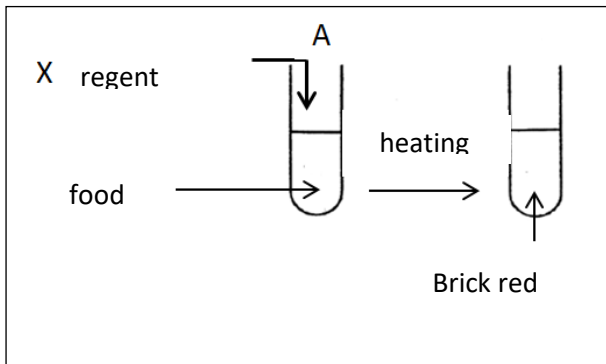
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iv) Write a metallic element that present in red blood cells .....

v) Name the substance that stimulate all the bo-chemical reactions in the organism.

.....

vi) Two experiment done by the students to identify nutrients present in two food samples are given below.



Name X and Y reagents.

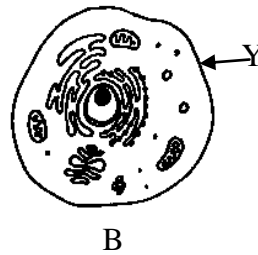
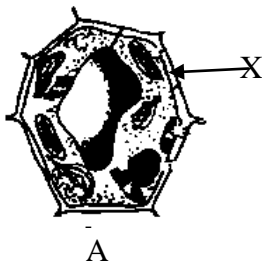
X = .....

Y = .....

A) What is the colour change that sudan 111 reagent mix with cream of curd.

.....

B)



i) Electronic microscopic views of two types of cells are given above. Name A and B.

X = .....

Y = .....

ii) Write two organelles present in A but not B

.....

iii) Write two types of cell divisions.

.....

03. A) Information of six elements present in the periodic table are given below. Write answers using given symbols. Symbols are not standard.

Element	No of energy levels present electrons	Group number
P	2	iv
Q	2	vii
R	3	ii
S	3	vi
T	3	iii
U	3	viii

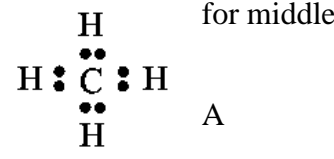
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iii) Name the metallic element which has highest reactivity.

.....

iv) a) Write the relevant letter mentioned in the above table suitable for middle atom of A .....



b) Write a physical property of that element.

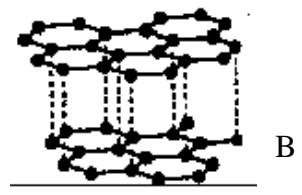
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c) Above compound available gas state in room temperature. Mention a reason according to the nature of bond that compound.

.....

B) Below picture shows arrangement of atoms of a certain element.

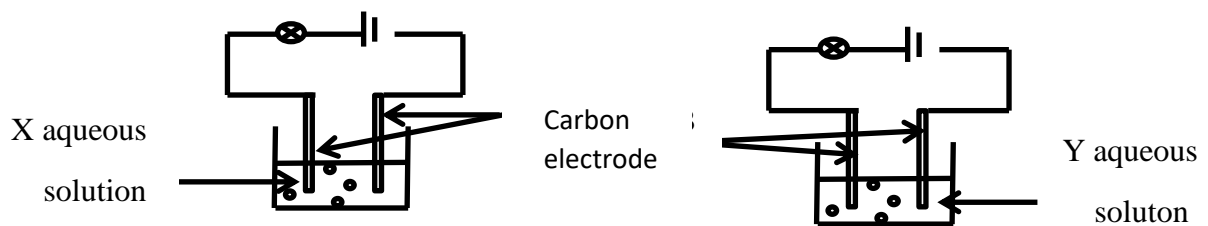
i) What is that structure shown by B?



ii) Why it is used as a lubricant material?

.....

C) The two set up used to do a activity using two chemicals in the laboratory are given below.



Observation. A – Bulb lights

B- bulb doesn't lights

i) What is the nature of bond which involve to make X solution, according to the observation.

.....

ii) Mention a chemical can be used to prepare solution Y.

.....

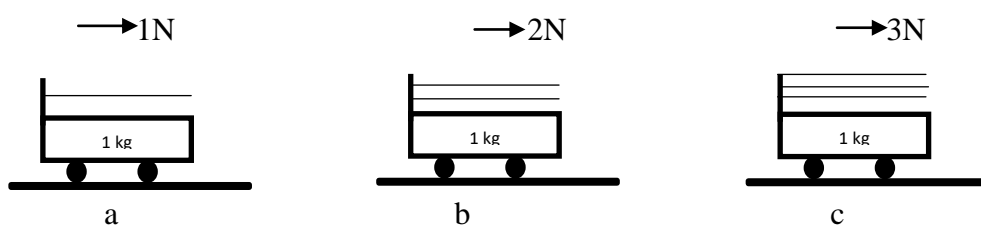
iii) What is reason that water available in liquid state in room temperature?

.....

iv) Mention a factor should be concerned when preparing X and Y solutions.

.....

04. A practical done by the student to verify a law of motion of Newton's given below.



i) Write two factors should be constant in this practical.

1) ..... 2) .....

ii) Which factor is increased respectively in the above (a) (b) (c) instances.

.....

iii) When applying a small horizontal force on the trolley does not move. What is the reason for that?.....

iv) A student said that the trolley can be easily more slightly inclined smooth plank wood.

Do you admit to it? .....

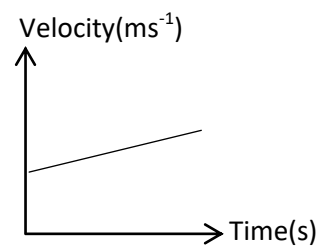
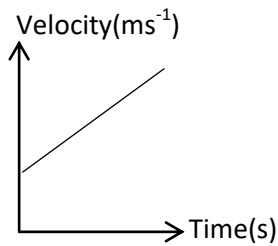
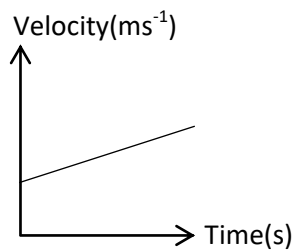
Write the reason for it .....

v) Why it is required stretch rubber band up to equal distance and parallel to the trolley?

.....

vi) what is the instrument that can be used to measure the force exerted on trolley? .....

vii) Three velocity graphs that drawn by the students for represent above instances are given below. Match the graph with relevant instance.



.....

viii) What is the relationship relevant for above there instances?

.....

ix) What is the Newton's law build up from it?

.....

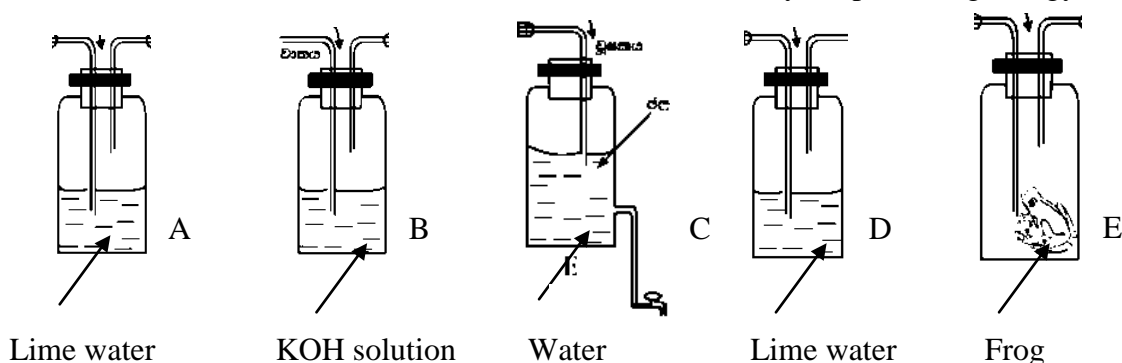
x) According to above equation what is the force that need to give  $2\text{ms}^{-1}$  acceleration on a mass of 500g. ....

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## Part B

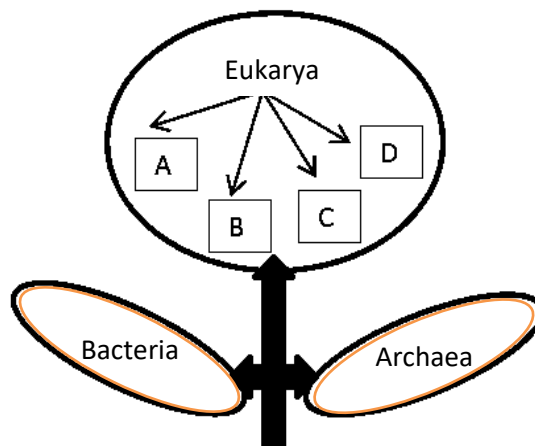
05. A) All organisms need energy for their metabolism. The respiration, which is an important characteristic of life is a series of biochemical reaction necessary for producing energy.



- i) What is cellular respiration?
- ii) The above bottles are provided to you state in sequence of the way of arranging these bottles to prepare a set up to show the release of CO<sub>2</sub> during respiration.
- iii) Name a suitable substance instead of frog.
- iv) What is the benefit of use potassium hydroxide solution?
- v) a) The lime water in one bottle turned to milky, when do the activity state the reasons for that?
- vi) Producing food by the organisms themselves is autotrophic nutrition. There are two categories of autotropism. Name them.
- vii) Write word equation for the process of photosynthesis.

B) Given below is the classification system introduced by Carl Woes in 1990

- i) State two benefits that we can obtain by classification of organisms.
- ii) Name A, B, C, and D belonging to Domain Eukarya according to above diagram.
- iii) Name the group separately from above that plants and animals belong.
- iv) What is the kingdom which live in sea water, belong to Domain Eukarya that contributes mostly to maintain the balance of oxygen and carbon dioxide in air . Give one example for it.



- v) State one useful and one harmful effects of bacterial activity to human.

06. A) A rough diagram of a graph that denoting the first ionization energy of a few consecutive elements belonging to second and third periods of periodic table is given below. (symbols are not true)

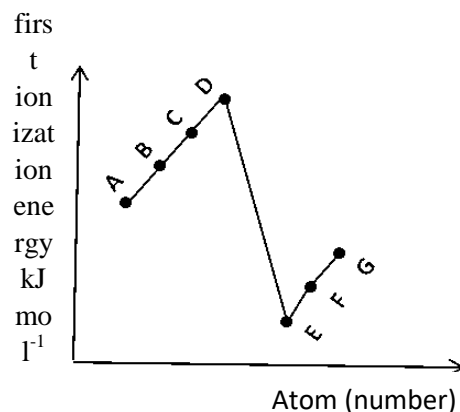
i) Define first ionization energy.

ii) Which elements from above has the highest first ionization energy?

iii) State two elements belong to third period and write their true symbols.

iv) Write the electronic configuration of E.

v) Build up the chemical formula of the compound formed by the reaction between E and oxygen.



B) When expressing the atomic mass value of  $1/12$  the mass of  $^{12}_6\text{C}$  isotope is used.

i) How above value is called?

ii) Define what is relative atomic mass of an element?

iii) The mass of a chlorine (Cl) atom is  $5.903 \times 10^{-23}$ g value of atomic mass unit is  $1.66 \times 10^{-24}$ g. Find the relative atomic mass of chlorine.

iv) Calculate the number of moles that contained in 24g of carbon .

C) Information of some element are given below. They are not true symbols.

Element	Atomic number	Number of protons	Mass number
A	6	6	12
B	6	6	14
C	8	8	16
D	16	16	32

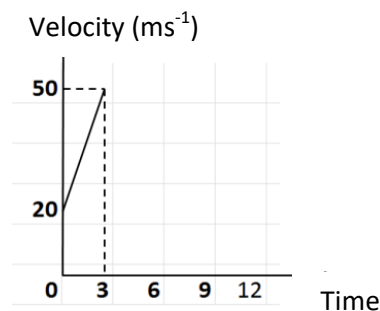
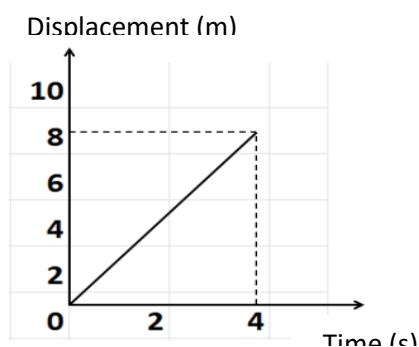
i) What is the number of neutrons in an atom of element B?

ii) Define the isotopes. Mention the pair of isotopes from above.

iii) Mention the pair of isotopes from above.

iv) Draw the lewis structure of the compound which consists of element A and C.

07. A displacement- time graph and a velocity- time graph is given below.



A object

B object

A)i) What is the maximum displacement of A?

ii) Calculate the velocity of A object.

iii) Describe the motion of A object.

iv) What is the maximum velocity reached by the B object?

B) i) Calculate the acceleration of B object using graph.

ii) If B travelled another 6 seconds towards the same direction using the maximum velocity reached, show it in graph B.

iii) Calculate the displacement of object B within first 03 seconds.

iv) What is the unbalanced force acts on the object within first 03 seconds if the mass of the object B is 1000kg?

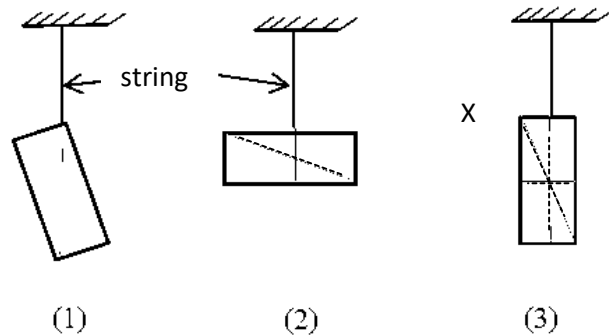
v) Calculate the momentum of the object B when it moves from maximum velocity.

C) A piece of thin metal sheet that was hung from three different places in three different instances is given below.

Vertical line passing through the string has marked on the sheet.

i) What is the name of point X that the vertical lines meet with each other?

ii) Under which type of equilibrium of forces that the above sheet exists in each of above instances?



iii) What are conditions that must be filled to maintain the equilibrium an object under the action of 3 forces?

iv) Name an instance that an object exists in equilibrium under three inclined coplanar forces.

08. A) Reproduction is an important process to maintain the continuity of life.

i) State two main types of reproduction of organisms.

ii) Which ways that natural vegetative propagation occurred in following plants?

a) Akkapana

b) Curry leaves

iii) State a reason for the necessity of dispersal of fruits and seeds for the plant.

iv) Name pituitary hormones that important for the following processes of female reproductive system.

a) Development of primary follicle

b) Ovulation

v) State the specific functions done by the umbilical cord when develop the foetus in the uterus of mother. (Marks 02)



vi) Name a disease infected by bacteria associated with reproductive system.

B) A wood cuboid two sand paper of various roughness, a pulley, twin strings and suitable weights were provided to the student groups to find the factors that effect on friction.

i) What are the factors affect on friction?

ii) State briefly the way of finding one factor that affects on friction using sand papers.

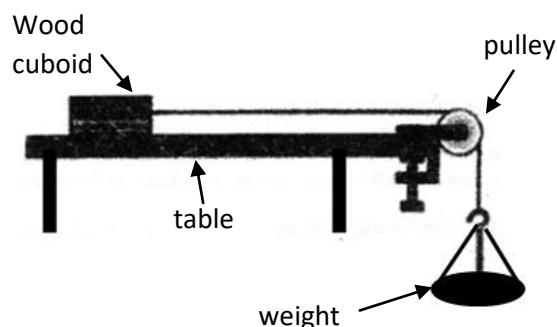
iii) Limiting frictional force had to use when obtaining measurements.

a) What is mean by limiting frictional force?

b) When consider the instances of keeping wood block on the table and pasting sand paper, what would be the observation of readings during limiting frictional force?

iv) What is dynamic frictional force?

v) State 02 beneficial instances of reducing friction.



09. Answer the questions using the elements given below. (sodium, nitrogen, magnesium, oxygen, carbon, silicon, Sulphur)

i) It is used to extract metals such as titanium and zirconium from their compounds.

ii) It is used in making alloys that important for producing air crafts.

iii) It is used in making transistors, diodes and solar cells

iv) It is used as fungicide.

v) It is used to fill electric bulbs and thermometers.(Marks 05)

B) Below given are some oxides formed by some elements

Element	Na	Mg	Al	Si	P	S	Cl,
Oxide,	Na <sub>2</sub> O	MgO	Al <sub>2</sub> O <sub>3</sub>	SiO <sub>2</sub>	P <sub>2</sub> O <sub>5</sub>	SO <sub>2</sub>	Cl <sub>2</sub> O <sub>3</sub>

i) Select the amphoteric oxide from above?

ii) What is strong basic out of them?

iii) What is the oxide used to produce antacidic medicine for gastritis patients.

iv) Find the number of oxygen atoms in 5 mol of Al<sub>2</sub>O<sub>3</sub>



Two students apply 10N and 15N two forces to move 50N weighted box placed on smooth surface.

i) Find the resultant force exerted by two children?

ii) One child applied 10N force for pull the box and another child applied 15N force for push the box toward the same direction. Fine the resultant force.

iii) In the second instance 8N frictional force is exerted on the object by the surface. Draw a diagram to show all the force acting on the box when its just start to move.

iv)What is meant by dynamic frictional force?

v) This shows the box suspended by four strings attached to the four corners. What is the tension force acting on each string ?

