5152

Mrs. Chamlika Fernando

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மேல் மாகாணக் கல்வித் திணைக்களம்
Department of Education - Western Province

වර්ෂ අවසාන ඇගයීම
ஆண்டிறுதி மதிப்பீடு - 2015
Year End Evaluation

ශ්‍රේණිය தரம் Grade	10	විෂයය பாடம் Subject	**Science**	පත්‍රය வினாத்தாள் Paper	**I**	කාලය காலம் Time	**01 hour**

01. To test protein in a food we use
(1) Sudan III test (2) Biurrette test
(3) Iodine test (4) Benedict test

02. Unrelevant answer regarding the differences among plant and animal cell is

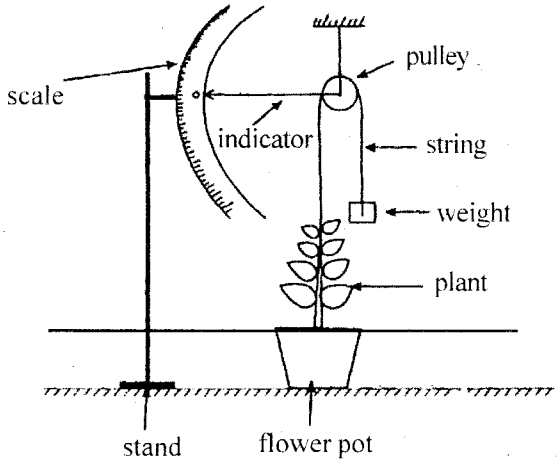
Animal cell	plant cell
(1) Chloroplasts abesent	Chloroplasts present
(2) large vacuoles present	large vacuoles present
(3) Cell wall absent	Cell wall present
(4) Cytoplasm is in a large space	Cytoplasm is in a small space.

03. An element which causes for the retarded growth of plant roots and appearing red / purple patches is
(1) Nitrogen (2) Posphorous (3) Potassium (4) Calcium

04. Which is not an excretory product of animals.
(1) Sweat (2) CO_2 (3) Urea (4) faecal matter

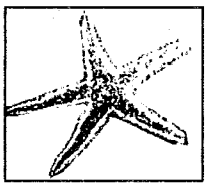
05. Following instrument is used to measure a common feature of organisms. It is the

(1) growth (2) development
(3) reproduction (4) movement



06. Unrelevent answer regarding bacteria is
(1) always microscopic (2) always heterotrophic
(3) four types of bacteria are present (4) shows asexual reproduction

07. This organism belongs to



(1) phylum mollusca (2) phylum arthropoda
(3) phylum annelida (4) phylum echinodermate

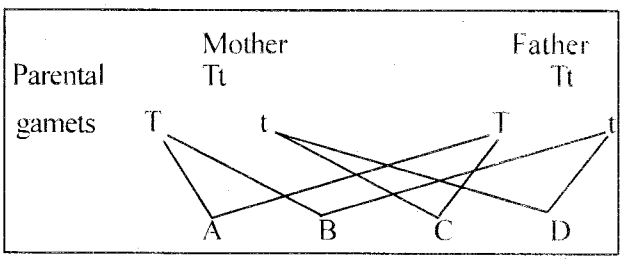
08. National flower of Sri Lanka is blue water lily. The Correct scientific name of it is,
(1) *Nymphaea Stellata* (2) *NYMPHAEA STELLATA*
(3) *nymphaea stellata* (4) *Nymphaea stellata*

09. Which is not a relevent answer for a underground stem of natural vegetative propagation.
(1) rhizome (2) corm (3) bulbil (4) stem tuber

10. Select the most appropriate answer regarding the order of the steps of tissue culture is
    (a) Introducing the part of vegetative tissue obtained from mother plant. into the culture medium.
    (b) Seperating the plantlets and placing them in test tubes to grow further.
    (c) allowing new roots and buds to be developed from the tissue called callus.
    (1) a, b, c (2) b, c, a (3) a. c, b (4) c. a. b

11. Materials exchange from mother to foetus through umbilical cord / placenta are
    (1) nutrients, oxygen and blood.
    (2) nutrients, oxygen and waste matter.
    (3) blood, germs and oxygen
    (4) nutrients, germs, blood

12. Thalacemia patient out of the children of thalacemia created from a heterozygous mother and a father is (prominent gene for thalacemia is considered as T)
    (1) A (2) B
    (3) C (4) D



13. An occasion where the knowledge of inheritance is **not** used.
    (1) Producing insect resistant crops using genetic engineering.
    (2) Producing amylase enzyme using different types of bacteria.
    (3) Replacing normal genes instead of disease carrieer genes.
    (4) Transplanting a healthy kidney instead of failure kidney.

14. The scientists who discovered electron, proton and neutron are respectively.
    (1) Thomson, Chadwick and Rutherfurd (2) Thomson, Neilborr, and Chadwick
    (3) Thomson, Rutherfurd and Chadwick (4) Chadwick, Rutherfurd and Thomson

15. Select the relevent answer.
    (1) Elements of group I, has the least ionization energy.
    (2) Elements of group III has the highest ionization energy.
    (3) First ionization energy is decreasing from left to right along with a period.
    (4) First ionization energy of second and third periods are greater than the first period.

16. Molecular formula of calcium (which is having the valency of 2) and the ion radical of sulphate is
    (1) $CaSO_4$ (2) $Ca(SO_4)_2$ (3) Ca_2SO_4 (4) $Ca_2(SO_4)_2$

17. Number of atomic molecules of oxygen in one mole of $CaCO_3$ is,
    (1) 1 (2) 2 (3) 3 (4) 5

18. If Chlorine atom is $_{17}^{35}Cl$, the number of protons, electrons and neutrons in chloride ion are respectively.
    (1) 17, 17, 18 (2) 17, 18, 17 (3) 17, 18, 18 (4) 18, 17, 18

19. The moleucle having a pair of lonepair electrons is,
    (1) H_2 (2) NH_3 (3) H_2O (4) CO_2

20. Special property of water due to intermoleuclar forces among water molecules is,
    (1) density of water is higher than the density of ice.
    (2) having less specific heat capacity.
    (3) having less boiling point.
    (4) existing as a gas in room temperature.

21. The substance which release a white coloured bright flame when heating is,
    (1) Ca (2) Mg (3) Al (4) Fe

$2Pb(NO_3)_2 \xrightarrow{\Delta} 2PbO + 4NO_2 + O_2$

Type of above reaction is.

(1) Chemical combination reactions.
(2) Double displacement reactions.
(3) Single displacement reactions.
(4) Chemical decomposition reactions.

23. Select the balanced euqation.

(1) $CaCl_2 + Na_2CO_3 \longrightarrow CaCO_3 + NaCl$
(2) $Al + 3HCl \longrightarrow AlCl_3 + 3H_2$
(3) $KClO_3 \longrightarrow 2KCl + 3O_2$
(4) $Fe_2O_3 + 3CO \longrightarrow 2Fe + 3CO_2$

24. The element which is suitable for the displacement of Cu from a copper sulphate solution is.

(1) Al (2) Cu (3) Ag (4) Au

25. Gas that could be obtain by up ward displacement of air is.

(1) O_2 (2) H_2 (3) CO_2 (4) CO_2 and H_2

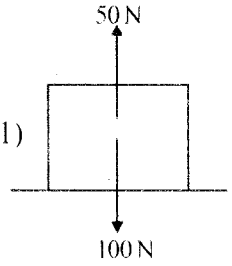
26. One of the factors which is not affected for the rate of reaction is.

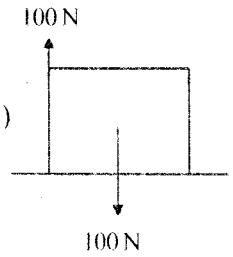
(1) temperature that reaction occurs.
(2) Concentration of reactants.
(3) Catalysts.
(4) Physical nature of the products.

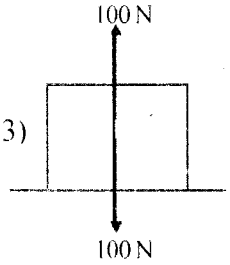
27. A vector quantity is.

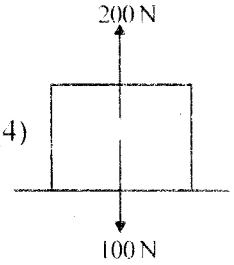
(1) length (2) weight (3) time (4) mass

28. Select the correct answer when we keep 100 N weight on a flat table and the force acting on it.

(1) 

(2) 

(3) 

(4) 

29. What is the mass of an object having 2 ms^{-2} acceleration, when we apply 8 N force ?

(1) 16 kg (2) 8 kg (3) 4 N (4) 4 kg

30. A factor which is **not** affecting for the limiting frictional force is,

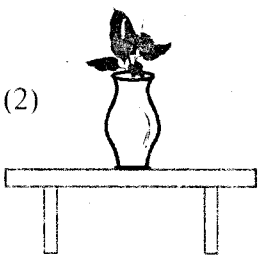
(1) nature of the contact surfaces.
(2) area of the contact surfaces.
(3) perpendicular reaction between surfaces.
(4) roughness of the contacting surfaces.

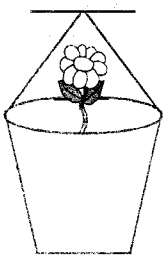
31. What is the total resultant force downwards force when we hang 500 g mass to the weight of 75 N in a newton balance?

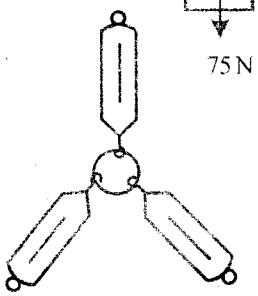
(1) 75 N (2) 80 N
(3) 125 N (4) 575 N

32. Select the correct diagram showing uniplanar parallel forces.

(1) 

(2) 

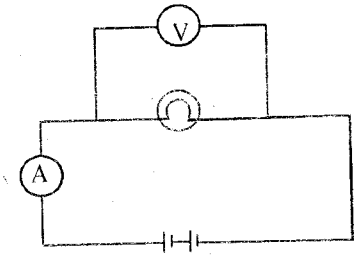
(3) 

(4) 

33. What is the pressure that is created at the bottom of a tank. when 2 m of it is filled with water ? (density of water is 1000 kgm^{-3} ; g = 10 ms^{-2})

(1) $2 \times 10^4\ Nm^{-2}$ (2) $2 \times 10^{-4}\ Nm^{-2}$ (3) $2 \times 10^3\ Nm^{-2}$ (4) $2 \times 10^2\ Nm^{-2}$

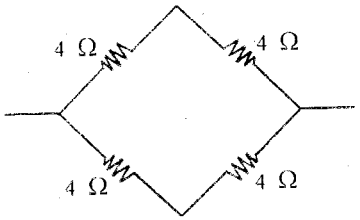
34. The resistance of the bulb in the circuit is 6 Ω. The current that flows is 1.5 A. The potential diffence among two terminals is,



(1) 1/4 (2) 4 V

(3) 6 V (4) 9 V

35. Equivalent resistance of this circuit is,



(1) 4 Ω (2) 8 Ω

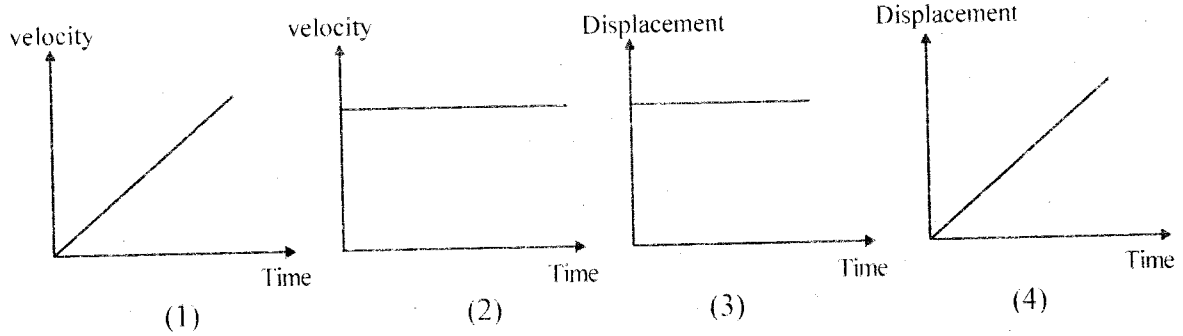
(3) 16 Ω (4) 64 Ω

36. Potential energy of a person having 50 kg mass on a 10 m high coconut tree. is (g = 10 ms^{-2})

(1) $\frac{50 \times 10}{10}$ J (2) $\frac{5}{1000} \times 10 \times 10$ J

(3) $50 \times 10 \times 10$ J (4) $500 \times 10 \times 10$ J

37. Select the graph when an object is at rest.



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

38. Of the statements given below which is **not** an aim of controlling dengue disease is.

(1) eradicating dengue from Sri Lanka.

(2) destroying the places where dengue mosquitoes are breeding.

(3) destroying all the types of mosquitoes.

(4) developing the facilities for the dengue patients.

39. Main factor which is affected to reject asbestos sheets in usage is.

(1) creating more heat when using asbestos sheets.

(2) difficult in recycling.

(3) causing cancer.

(4) causing kideny diseases.

40. Most suitable strategy to prevent from natural disasters like earth - quakes, drought, land slides etc is.

(1) transferring people from natural disaster areas to another place.

(2) taking actions by having environmental organizations.

(3) making protective walls or protective strategies.

(4) take actions by keeping attention for the annoucements of natural disasters.

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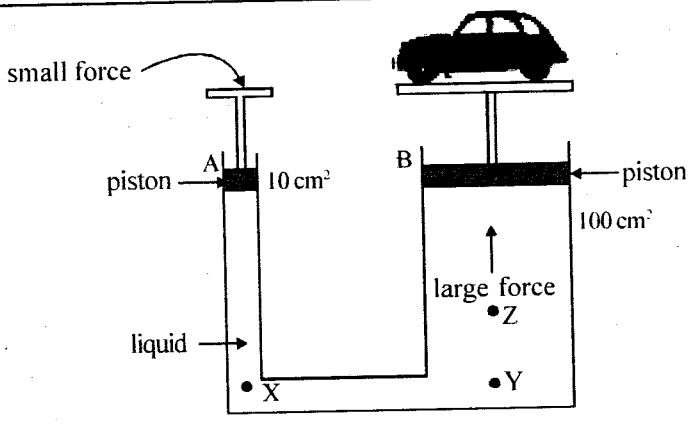
ශ්‍රේණිය தரம் Grade	විෂයය பாடம் Subject	පත්‍රය வினாத்தாள் Paper	කාලය காலம் Time
10	Science	II	03 hours

Part - A - Structural Essays

- **Answer all the question in part A in given space.**
- **Selecting one question from each Biology, Chemistry, Physics answer three questions in part B.**

01. (A) An instrument which has been prepared by a group of students for an exhibition is givewn here. Applying a small force on piston in tube A, it is possible to lift a weight through piston in tube B with large force. Area of tube A is 10 cm^2, Area of tube B is 100 cm^2.



(i) Indicate the relationship between pressure, force and area by an equation. (1 mark)

.....

(ii) Give the international standerd units to measure above quantities (1 1/2 marks)

Pressure ..... Force ..... Area .....

(iii) (a) What can you say about the pressure of point Y comparing with pressure of point X in tube A, when it is in equlibrium. (1 mark)

.....

(b) What can you say about the pressure of point Z comparing with point X in tube A ? (1 mark)

.....

(iv) What is the pressure when applying 5 N force on a piston which connected to the tube A ? (1 1/2 marks)

.....

(v) What is the resultant force on piston which connected to the tube B, when applying a force 5 N on piston which is connected to the tube A ? (1 1/2 marks)

.....

(B) (i) What is the amount of water moles if 360 g of water used as the liquid in the above setup ? (H = 1 , O = 16) (1 1/2 marks)

.....

(ii) How many water molecules consists of above amount of water ? (1 mark)

.....

(iii) What is the specific type of inter molecular bond in water molecules ? (1 mark)

.....

(C) It is supplied energy to operate the above setup by burning food.

(i) What is the type of food which used to obtain energy other than Carbohydrates ? (1 mark)

.....

(ii) Name the final product of digestion of type of food you indicated above. (1 mark)

.....

(iii) Write an experiment to identify energy releasing food item mention above and indicate your observations. (2 marks)

.....

.....

(Total 15 marks)

02. All the living organisms made up of a single cell or many cells and the cell is the smallest unit which is functioning on a living body.

(A) (i) Above statement is the part of cell theory. Name the scientist who introduced the cell theory.

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

(ii) Mention three steps of preparation of speciman with plant cells to observe through microscope.

.....

.....

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

(iii) What is the organelle which is called power house ? (1 mark)

.....

(B) The cell wall is mainly made up of cellulose.

(i) What is the basic organic compound of biological matter which cellulose consists ? (1 mark)

.....

(ii) What is the chemical which is used to identify above organic matter in the laboratory. (1 mark)

.....

(iii) What is the process can be used to conclude that any food item is consists of protein. (2 marks)

.....

.....

(iv) What are the vitamins which dissolved in fat ? (1 mark)

.....

(C) (i) What is the organell which involve to transfer inherited characters ? (1 mark)

.....

(ii) Who is the first scientist and what is the plant he used to test about transfering inherited characters? (1 mark)

1. Scientist ..... 2. Plant .....

(iii) Define the words given below

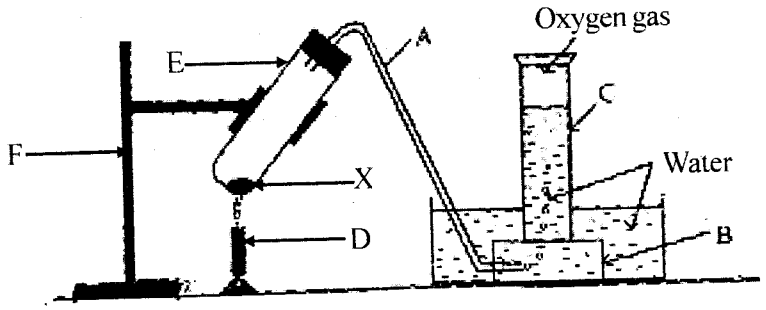
1. Phenotype ..... (1 mark)

2. Geno type ..... (1 mark)

(iv) Name two genetic disorders due to sex linked inheritance. (2 marks)

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

(Total 15 marks)



(A) A set of apparatus that can be used to collect Oxygen gas is given above.

(i) Name A, B, C, D, E and F. A ..... B. .....(3 marks)

C ..... D ..... E ..... F .....

(ii) Name the method which is used to collect Oxygen gas using above setup. (1 mark)

.....

(iii) Condys can be used as X to prepare a sample of Oxygen gas. Write the chemical name of X.

.....(1 mark)

(iv) Write the balanced equation for decomposition of condys. (2 marks)

.....

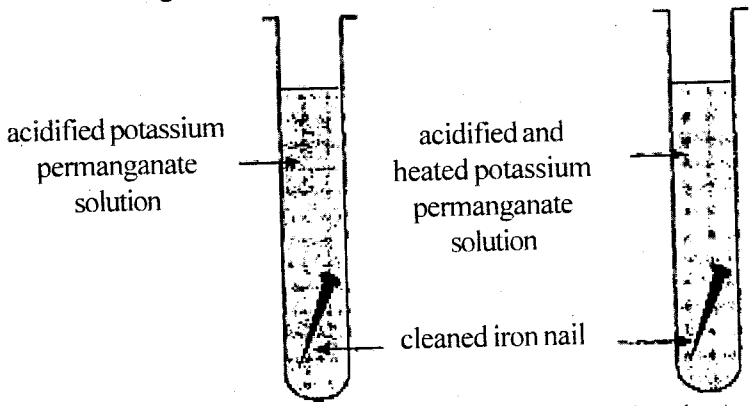
(v) What is the colour can be obtained which remaining substance after heat decomposition when dissolving in water? (1 mark)

.....

(vi) Mention two physical properties of Oxygen gas. (2 marks)

.....

(B) It is immersed two cleaned iron nails into the two tubes A and B fill with acidify dilute potassium permanganate according to the diagram given below.



(i) What are the observations can be taken after two minutes in tube A and tube B. (2 marks)

.....

.....

(ii) What is the factor affects for above observation. (1 mark)

.....

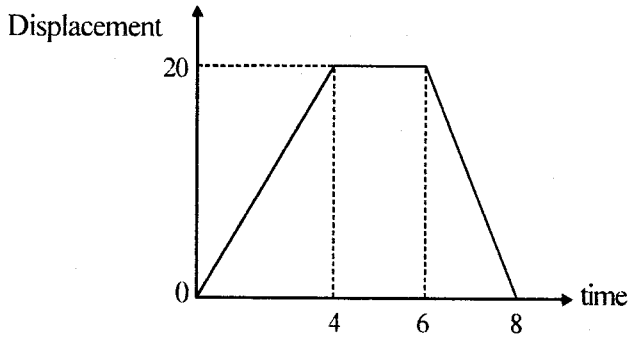
(iii) Name two other factors that affect the rate of reaction but not tested in the above experiment.

.....

(2 marks)

(Total 15 marks)

04. (A) The motion of a certain object that travelled along a straight line shown in the displacement time graph below.



(i) (a) It should be used international standered unit to measure the displacement and time. Write the relevant symbol of them. (2 marks)

1. Displacement ..... 2. time .....

(b) What is the vector quantity of above them ? ..... (1 mark)

(ii) What is the displacement of the object after 6 s ? (1 mark)

.....

(iii) What is the minimum time taken by the object to reach above displacement ? (1 mark)

.....

(iv) Calculate the maximum velocity of that object in that time duration. (2 marks)

.....

(v) What can you say about the motion during the interval from 4 s to 6 s. (1 mark)

.....

(B) "The acceleration of a body is directly propotional to the unbalanced force acting on it, while it is inversely propotional to its mass."

(i) What is the law that presented by above statement ? (1 mark)

.....

(ii) Write an equation that relevant to above law using symbols. (2 marks)

.....

(iii) A force of 20 N is applied on a object of 10 kg moving at a uniform velocity, in the direction of its motion. Find acceleration of the body. (2 marks)

.....

(iv) What is the momentum of an object of mass 10 g moving at a velocity of 160 ms^{-1}. (2 marks)

.....

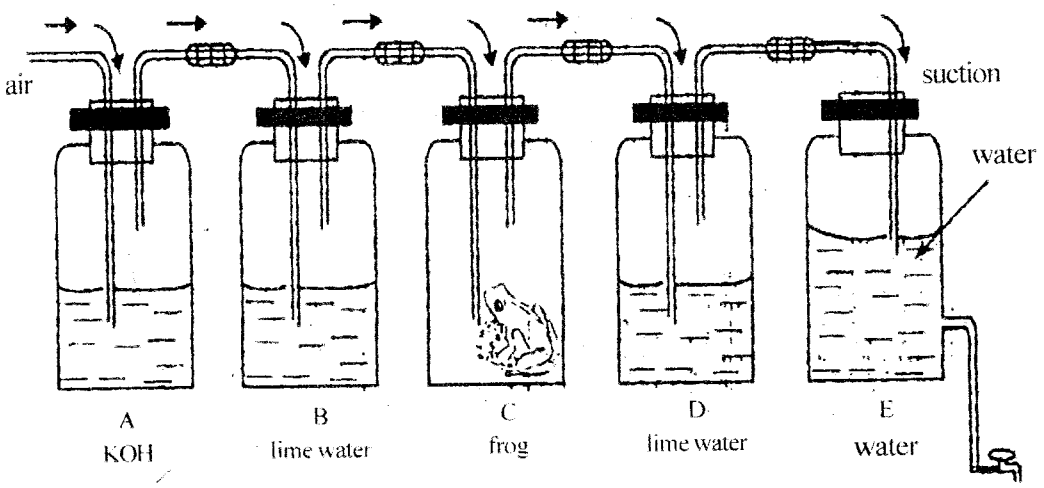
(Total 15 marks)

Part B - Essay Type Questions

- **Answer three questions only.**
- **Select one question from each biology, chemistry and physics.**

Biology

05. (A) Following set up is prepared to find out a gas experimentally which is released during the process of respiration, an important life function of organisms.



When water in bottle E removes slowly an air flow occurs from A to E.

(i) Explain the term cellular respiration." (2 marks)

(ii) According to the above set up, what is the gas releasing during respiration. (1 mark)

(iii) When the suction is functioning, mention the observations that can be seen in B and D vessels after some time. (2 marks)

1. Vessel B :-
2. Vessel D :-

(iv) State the reasons for the above observations

1. Vessel B :-
2. Vessel D :- (2 marks)

(v) How should the above set up be changed to a controlled experiment. (2 marks)

(B) Acting as a respiratory medium can be stated as a specific property of water which is essential for the maintenance of life.

(i) Which propotion of the body mass of living organisms is composed of water. (1 mark)

(ii) In addition to the above specific property, state 2 other specific properties of water and state its contribution for the maintenance of life. Copy the following table into your answer script.

Specific property	The contribution for the maintenance of life
1.	.....
2.	.....

(4 marks)

(iii) State the functions of following mineral and vitamins in human body and deficiency symptoms of them. Use a table like below.

constituent	function	deficiency symptoms
1. Calcium 2. Vitamin A 3. Vitamin C		

(6 marks)

(Total 20 marks)

06. (A) The function of the ovary of female reproductive system is developing a female reproductive cell and releasing to fertilize.

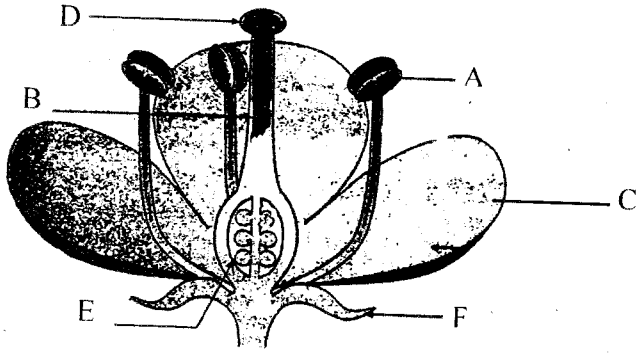
(i) (a) Name the two stages of above process that occur in the ovary. (2 marks)

(b) Briefly explain the phenomenon "fertilization." (2 marks)

(c) State 2 changes occur in the foetus when it is three months old. (2 marks)

(ii) Write 2 sexually transmitted diseases. (2 marks)

(B) (i) (a) Given below is a lognitudinal section of a typical flower.
Name the parts A, B, C, D, E, F. (6 marks)



(b) State the functions of parts C and D. (2 marks)

(ii) Mention 2 adaptations shown by plants to avoid self pollination with examples. (2 marks)

(iii) What are the needs fulfilled by plants by dispersing fruits and seeds. (2 marks)

(C) Complete the following table based on the common features of following groups of vertebrates.

Group	nature of the skin	nature of the heart
1. pisces 2. Amphibia 3. Reptilia 4. Mammalia		

07. (A) To extract iron, iron are reduces in a blast furnace under high temperature.

(i) Name a compund which is used as iron ore and write its chemical formula too. (2 marks)

(ii) Name 2 other raw materials used with iron ore to fed into the furnance. (2 marks)

(iii) Write down the balanced chemical equation for the final reaction taken place, when the above raw materials are reacting within the furnance. (3 marks)

(iv) The slag floats on molten iron under the bottom of furnance. What is the advantage of that ? (2 marks)

(v) What is the method that should be used to extract metals like Na and Al. Explain using the activity series. (3 marks)

(B) magnesium + copper sulphate ® Magnesium sulphate + Copper

(i) Write down the blanced chemical equation for the above chemical reaction. (2 marks)

(ii) What is the type of reactions that the above reaction belongs to. (1 mark)

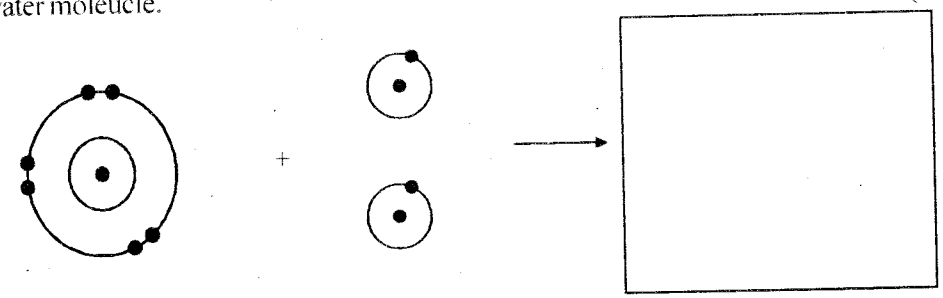
(iii) Find the mass of Mg that is needed to obtain 127 g of copper.
(Cu = 63.5 , Mg = 24 , S = 32 , O = 16) (3 marks)

(iv) Mention the nature of the reactions between metals Mg and Cu with diluted HCl acid. (2 marks)

(Total 20 marks)

08. (A) (i) Oxygen + Hydrogen ⟶ Water

Given below is the formation of a water molecule. Complete the way of forming bonds of a water moleucle. (2 marks)



(ii) What is the type of bond presents in a water molecule. (1 mark)

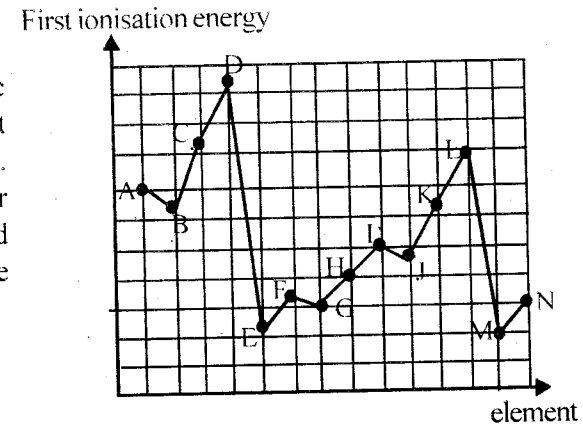
(iii) Write 2 common features of the compounds with that type of bond. (2 marks)

(iv) If you are provided with a NaCl solution, carbon electrodes, batteries, a beaker, a torch bulb, draw the diagram for the experiment which is used to show that electricity conducts through NaCl solution. (3 marks)

(v) Draw the Lewis structures of
(i) NH_3 molecule (ii) O_2 molecule (2 marks)

(vi) Phosphorus is forming two compounds with chlorine. Write down the chemical formula of the chloride formed by phosphorus by indicating the valency of 5. (1 mark)

(B) So many patterns can be seen in the periodic table. Among them, the variations of first ionisation energy is given in the following graph. 14 elements in three periods are given in order from A to N. The symbols are not standard symbols. (Write the answers using only the elements given in the graph.)

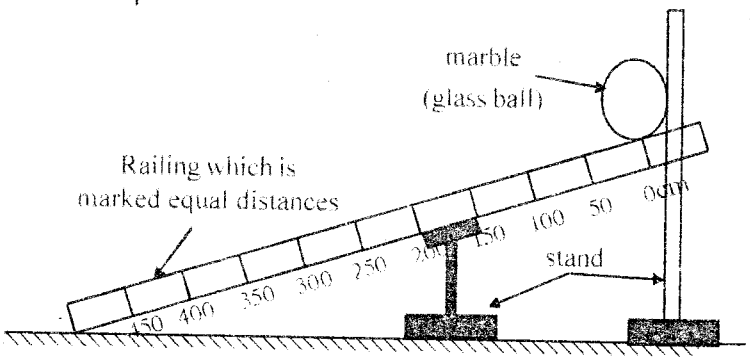


(i) If the element A belongs to the second period.
  (a) Identify and name the elements from A to F. (3 marks)
  (b) Name another element that has similar properties as of element D. (1 mark)
(ii) Of the above, name the element of the lowest first ionisation energy. (1 mark)
(iii) Explain the reason for lowering of first Ionisation energy of the above element using the atomic model of the atom. (2 marks)
(iv) Of the above elements, name
  1. two metals
  2. two non metals. (2 marks)

(Total 20 marks)

Physics

09. (A) Following set up is used to study the change of displacement relevant to the motion of a marble along an inclined plane.

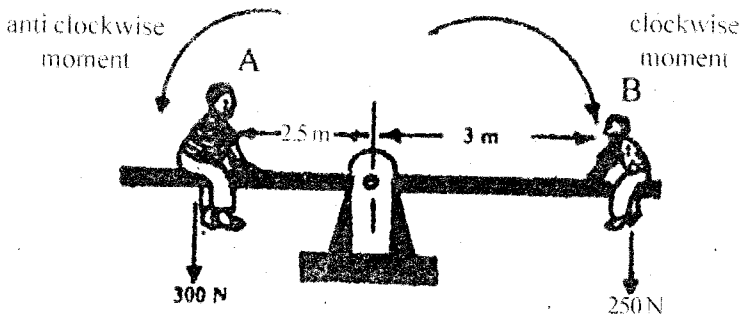


(i) (a) Is it necessary to increase or decrease the inclination of the railing to obtain readings more accurately. (1 mark)
  (b) Mention the reason for your answer. (2 marks)
  (c) Briefly explain the way of calculating time more accurately in the above activity. (2 marks)
(ii) What is the initial velocity of the marble ? (1 mark)
(iii) Write down a single term for "rate of change of displacement." (1 mark)
(iv) The time is marked relevant to the displacement of the marble when it is passing each mark of the railing. It is given in the following table.

displacement (cm)	50	100	150	200	250	300	350	400
time (s)	1.0	1.8	2.4	2.8	3.2	3.6	4.0	4.4

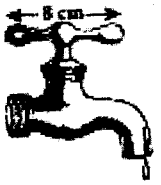
Study the facts in the above table and plot the displacement - time graph for that. (2 marks)

(B) Following diagram shows how two students are sitting on a See - saw to keep it in equilibrium.



(i) What is the downward force given by the student A at the instance of equilibrium. (1 mark)
(ii) What is the mass of student A. (2 marks)
(iii) Calculate the clockwise moment of the see saw in this instance. (2 marks)
(iv) What can you say about the clockwise and anti - clockwise moment of this instance. (1 mark)

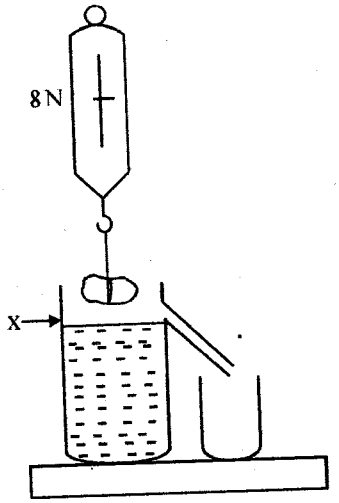
(C) (i) To open the tap given in the diagram two equal and opposite forces should be applied. What is the name of that force. (1 mark)



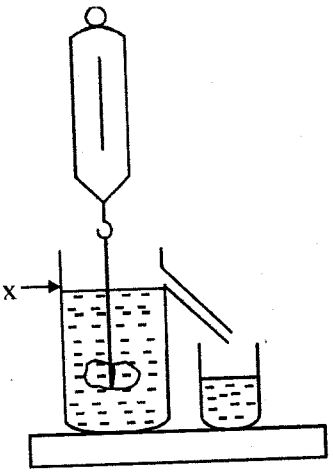
(ii) Write down a word equation for the quantity you have mentioned in above answer. (2 marks)
(iii) Draw a rough sketch of the tap and indicate the way of acting forces using arrows. (2 marks)

(Total 20 marks)

10. (A) A vessel in a laboratory is filled totally with water and a stone suspended on a spring balance is immersed in water in that vessel. The diagram of that activity is given in the following table.



(1)



(2)

(i) What is the name of the instrument X. (1 mark)
(ii) What is the real weight of the stone. (2 marks)
(iii) What are the observations that are obtained when immersing the stone in water. (2 marks)
(iv) What is the reason to decrease the weight of the stone when it is in water. (2 marks)
(v) When the stone is totally immersed in water, the reading of the Newton balance is 6 N.
(a) Calculate the upthrust exerted by water on the object. (2 marks)
(b) What is the weight of the displaced water, when the stone is totally immersed in water. (2 marks)

(vi) When we put objects into a liquid, some objects sink in the liquid, while some objects float on the liquid. Write down the principle of floatation. (2 marks)

(B) (i) The kinetic energy of a flying eagle is 225 J. Its mass is 2 kg. Calculate the velocity of the eagle in that instance. (2 marks)
(ii) To see the flying eagle clearly, a child went 8 m along a staircase (an inclined plane) and climbed onto a building. The mass of the child is 40 kg. ($g = 10\ ms^{-2}$)
(a) Calculate the amount of work done by the child. (3 marks)
(b) If it took 1 minute to climb the staircase, find the rate of work done. (2 marks)

(Total 20 marks)