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

වර්ෂ අවසාන ඇගයීම - 2023 (2024)
ஆண்டிறுதி மதிப்பீடு - 2023 (2024)
Year End Evaluation - 2023 (2024)

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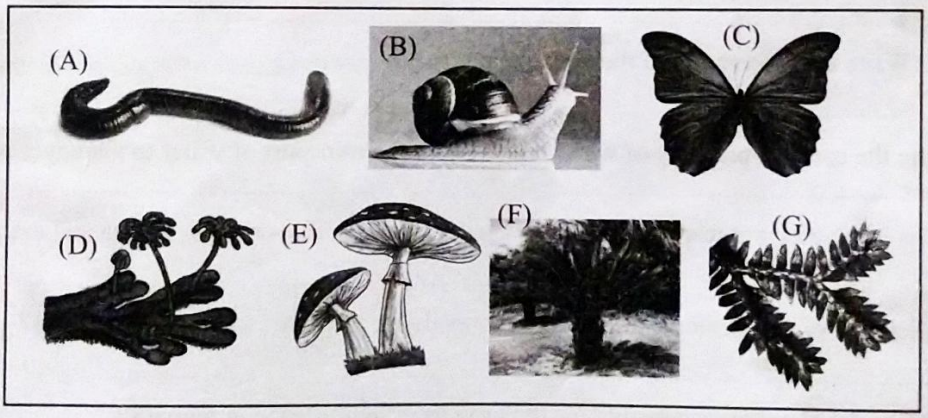
ශ්‍රේණිය / தரம் / Grade	10	විෂයය / பாடம் / Subject	Science	පත්‍රය / வினாத்தாள் / Paper	II	කාලය / காலம் / Time	03 Hours

නම / பெயர் / Name ..... විභාග අංකය / சுட்டிலக்கம் / Index No. .....

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

Part A

A) A record of organisms identified in a field trip has forwarded by a group of students. Given below are few organisms identified by them.



(i) Name the domain to which above organisms belong ..... (1 mark)

(ii) Write the letter of the organisms which belong to kingdom fungi.

..... (1 mark)

(iii) Write the letter which indicates a non flowering plant with seeds.

..... (1 mark)

(iv) What are the two main types of flowering plants?

.... (2 marks)

(v) Write the letter of the first organism to evolve a body cavity called coelom.

..... (1 mark)

(vi) Of the organisms given above, name the organism and its phylum with soft bodies and triploblastic ..... (2 marks)

(vii) Write the letter of the organism belonging to the phylum with highest number of species in kingdom animalia. ..... (2 marks)

B. (i) Given below organells perform different functions in a cell. Write one function for each.

(a) ribosome - ..... (1 marks)

(b) nucleus - ..... (1 marks)

(c) golgi bodies - ..... (1 marks)

(ii) What is the organelle of the cell associated with respiration? .....(1 mark)

(iii) Name the type of cell division which is important in producing new cells and healing wounds.

..... (1 mark)

(Total 15 marks)

02. A. Chemical compounds that build up living matter can be divided into two categories as organic compounds and inorganic compounds.

(i) Of the bio molecules in the living body which one is considered important in storage of genetic information of organisms ..... (1 mark)

(ii) A group of students heated a certain food substance in a crucible and hold a glass sheet above the crucible.

a) Name two chemical substances they can use to identify water in the food.

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

b) Write an observation in the above experiment.

..... (1 mark)

(iii) Write the specific property of water related with the transport of water to the upper part of the plant. ..... (1 mark)

(iv) What is the element responsible for deficiency diseases like cramps, nausea and diarrhoea?

..... (1 mark)

(v) Deficiency of which element in plants causes dying of tissues at the tips of leaves?

..... (1 mark)

(vi) What is the element responsible for the growth of intelligence in humans?

..... (1 mark)

B. Initiating rooting while it is still attached to the mother plant is known as layering.

(i) Name two types of layering.

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

(ii) What is the importance of layering? ..... (1 mark)

(iii) a) Grafting is an artificial propagating method. In this method, name the rooted part of the plant.

..... (1 mark)

b) Write a special property of this part of the plant ..... (1 mark)

(iv) Which type of plant can used for grafting? ..... (1 mark)

(v) What is the imporatance of cross pollination in plants? ..... (1 mark)

(Total 15 marks)

03. (A) Atomic numbers of nine consecutive elements in the periodic table are given in the table below.

Element	A	B	C	D	E	F	G	H	I
Atomic number	11	12	13	14	15	16	17	18	19

Answer the questions using only the given symbols.

(i) Which element has the lowest first ionisation energy? ..... (1 mark)

(ii) Select the element that form oxide with highest acidity.

..... (1 mark)

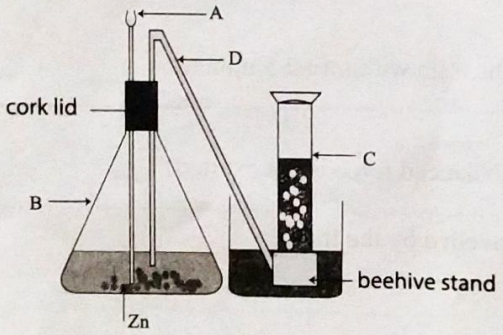
(iii) Write an observation, when element 'B' burns in air.

.....(1 mark)

(iv) Which element has the highest electronegativity?

..... (1 mark)

(B) Given below is a set up used to collect a certain gas in the laboratory.



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

..... (2 marks)

(ii) Mention an error in the set up. ..... (1 mark)

(iii) What is the chemical compound added into 'A' ..... (1 mark)

(iv) The chemical compound mentioned in (iii) above and Zn reacts. Write the balance equation for the above reaction. ..... (2 marks)

(C) The electrons in the valence shell contributes when forming chemical bonds.

(i) Draw the lewis dot and cross diagram of the chemical compound formed between nitrogen (N) and hydrogen (H)

(2 marks)

(ii) In the above structure there is a pair of electrons without bonding .
What is the name given to this pair of electrons?

..... (1 mark)

(iii) Mention the type of bond/s of the following compounds.

(a) NH_4Cl ..... (1 mark)

(b) $C_6H_{12}O_6$ ..... (1 mark)

(Total 15 marks)

04. (A) A train that travels in a horizontal path starts from rest and takes 10 m s^{-1} velocity after 5 minutes. Then it travels in the same velocity for another 15 minutes. (Velocity increases and decreases uniformly)

(i) Draw a velocity time graph to show the above description.

(3 marks)

(ii) Calculate the acceleration of the train within first 5 minutes.

..... (2 marks)

(iii) What is the time period an unbalanced force is not exerted?

..... (2 marks)

(iv) Calculate the total distance travelled by the train.

.....

..... (2 marks)

(B) (i) At the moment the train starts to travel a passenger who was standing lost the balance and fell in the forward direction.
What is the Newton's law which explains this incident?

..... (1 mark)

(ii) Calulate the momentum of a passenger with a mass of 60 kg when the train travels with uniform velocity.

.....

..... (2 marks)

(C) (i) Why does foot board of train has rough surface?

..... (1 mark)

(ii) Write a disadvantage of the above phenomena you mentioned in (i) above.

..... (2 marks)

(Total 15 marks)

Part B

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Answer only three questions from the questions 5, 6, 7, 8 and 9

05. (A) At present gene engineering technoloty is used to develop efficiency of different fields.

(i) Write two inherited characteristics of man. (2 marks)

(ii) Name the first person who conducted scientific experiment on inheritance. (1 mark)

(iii) a) Name the plant used for experiments on inheritance by the above mentioned person in (ii) above. (1 mark)

b) Write two reasons for using above mentioned plant. (2 marks)

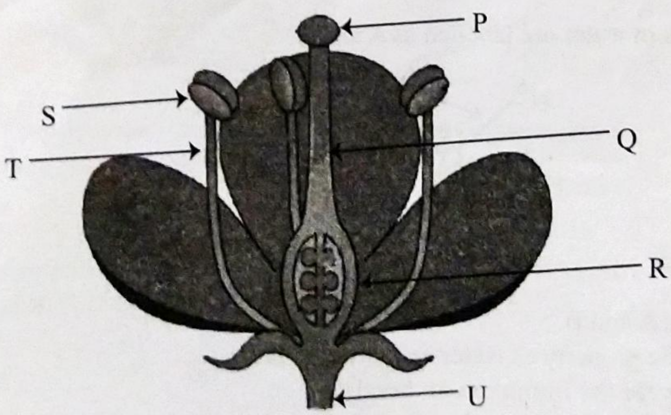
(B) Haemophilia is a sex linked inherited disease. (consider 'H' as dominant character and 'h' as recessive character)

(i) Write the genotype of a carrier woman for haemophilia. (1 mark)

(ii) Draw a punnet square to show offsprings when a carrier woman is married to a healthy man. (2 marks)

(iii) Write an example for the application of gene technology. (1 mark)

(C) Flower is the part that sexual reproduction takes place.



(i) Name the parts P, Q, R and S. (2 marks)

(ii) What will happen to the structure 'R' after fertilization ? (2 marks)

(iii) Write two importances of the dispersal of fruits and seeds. (2 marks)

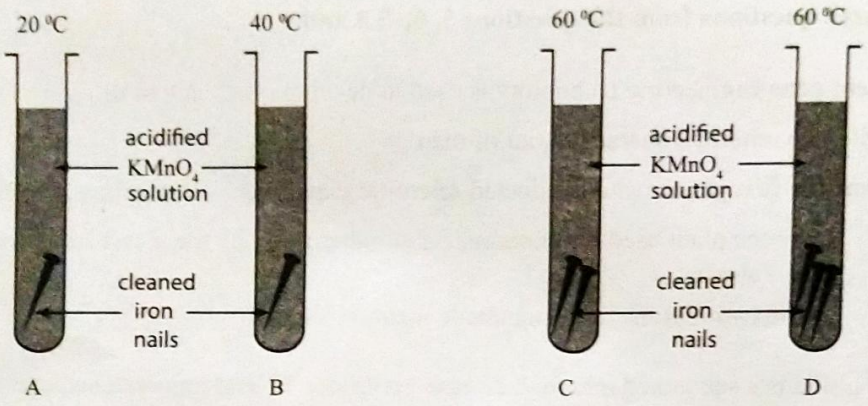
(iv) a) Write the method of dispersal of fruits and seeds given below.

1. Coconut 2. Hora 3. Rubber (3 marks)

b) Write an adaptation for the dispersal of fruits and seeds in cashew plant (1 mark)

(Total 20 marks)

06. (A) The following is a diagram of a set up which is used to identify factors affecting the rate of reaction.



(i) What factors that affect the rate of reaction are tested here? (1 mark)

(ii) What is the factor that should be kept constant in all four tubes? (1 mark)

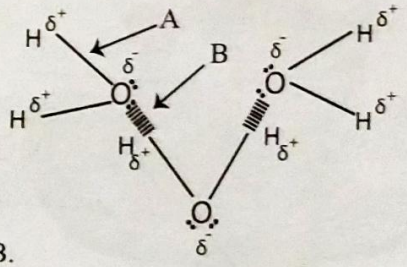
(iii) Out of the factors mentioned in (i) above, mention the pair of tubes to test each factor. (1 mark)

(iv) Write the observation that is used to compare rate of reaction in this experiment. (1 mark)

(v) Write the decending order of rate of reaction in test tubes A, B, C and D (2 marks)

(vi) Suggest a method of keeping these four tubes at constant temperature during the experiment. (2 marks)

(B) Two types of bonds in water are labelled as A and B.



(i) Name the bonds A and B. (2 marks)

(ii) Write the specific property of water due to bond 'B'. (1 mark)

(iii) Write the reason for the formation of bond 'B'. (1 mark)

(iv) What is the number of water molecules in a mole of water? (1 mark)

(C) Given below is an incomplete part of a reactivity series.

K | 1 | Ca Mg Al | 2 | 3 | Pb | 4 | Hg Ag Pt Au

(i) Write elements from 1, 2, 3 and 4 respectively. (2 marks)

(ii) The method of extraction of a metal is decided according to its location in the activity series. What is the method of extraction the element '1' industrially? (1 mark)

(iii) Out of the elements from 1 to 4 which element does not react with HCl? (1 mark)

(iv) When Mg and Ag metal stripes are added separately into two test tubes with copper sulphate solutions which element reacts with the solution? (1 mark)

(v) Write 2 observations in (iv) above. (2 marks)

(Total 20 marks)

07. (A)(i) Water is stored about 2 m height in a spherical shape water tank with 3.5 m radius. (The density of water is 1000 kg m^{-3}, g = 10 m s^{-2})

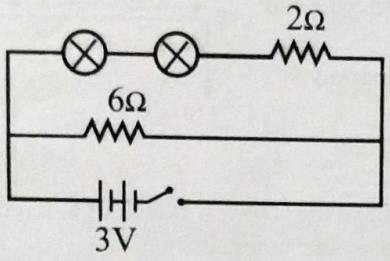
(a) Calculate the pressure exerted on the bottom of the tank. (2 marks)

(b) What is the force exerted on the bottom of the tank as a result of water pressure? (3 marks)

(c) Calculate the upthrust of an object of 2 kg when it is floating fully immersed. (2 marks)

(d) Write the Archemede's law that explains 'c' (3 marks)

(B)



In the above circuit each bulb has 1Ω resistance.

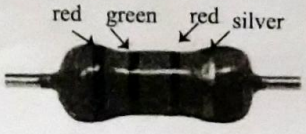
Answer the following questions using the above circuit.

(i) Calculate the equivalent resistance. (2 marks)

(ii) Find the current that flows through the bulb when the switch is closed. (2 marks)

(iii) If one bulb extingusihes what will happen to the other bulb? (2 marks)

(iv) Given below is a fixed resistor.



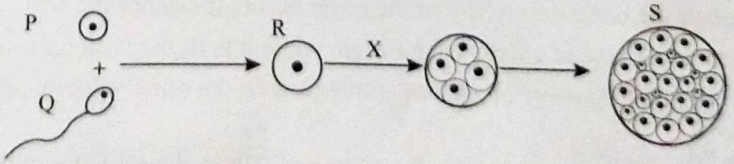
red = 2
green = 5
silver = 10%

a) Calculate the tolerance value of the above given resistor. (2 marks)

b) Find the range of the resistance of the resistor. (2 marks)

(Total 20 marks)

08. (A) After implantation, foetal development occurs with the division of cells. Given below is a sketch diagram of It.



(i) Name P, Q, R and S. (2 marks)

(ii) Name the process takes place at 'X' (1 mark)

(iii) List separately hormones produced in female and male reproductive systems. (2 marks)

(B)(i) Write two types of autotropic nutrition. (2 marks)

(ii) By which name is the ability to respond for the changes in the environmnet is known as? (1 mark)

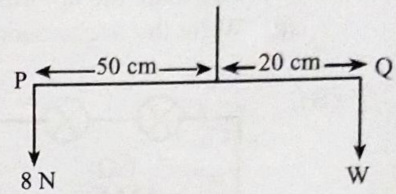
(iii) Name a structure which is used for the exchange of gases in plants. (1 mark)

(iv) Which component of the air enters into the plant during photosynthesis? (1 mark)

(C) (i) Write two instances where couple of forces used in daily life. (2 marks)

(ii) Towards north and south direction, 30 N and 18 N forces are excerted repectively on a trolley which is kept on a table in the laboratory. Find the resultant force of the trolley and the direction of the motion. (2 marks)

(iii) (a) The diagram here, shows and instance where 8 N and weight W are applied on the two sides of a rod, which is balanced. Calculate the weight W. (3 marks)



(b) Calculate the W if the rod is balanced at its center.

(iv) The weight of a student is 250 N who is seated on a swing. Draw a sketch of a diagram to show the forces acting on it if the child is at equilibrium on the swing. (3 marks)

(Total 20 marks)

09. (A) A blast furnace is used for the extraction of iron. Reduction of haematite takes place in it.

(i) Write chemical formulas of other raw materials used other than haematite. (2 marks)

(ii) Calculate the molar mass of haematite.
(Fe = 56, O = 16) (2 marks)

(iii) Write two balanced equations for the forming of carbon dioxide during extraction of iron. (2 marks)

(iv) Mention the main by product and write down a use of it. (2 marks)

(v) Extraction of iron releases harmful gases to the environment. Mention a harmful gas and state a harmful effect of that gas when it releases to the environment. (2 marks)

(B) An eagle of 5 kg, catches a fish of 1.5 kg coming from a 500 m height with a velocity of 3 m s^{-1}
($g - 10 \text{ m s}^{-2}$)

(i) Calculate the potential energy of the eagle before it catches the fish. (2 marks)

(ii) Calculate the kinetic energy of the eagle when it is flying with uniform velocity (2 marks)

(iii) Find the kinetic energy of eagle if it travels with the same velocity after catching the fish. (3 marks)

(iv) Draw a velocity-time graph for the falling of fish if the eagle loose the fish from its mouth into water after flying to a height 100 m. (3 marks)

(Total 20 marks)

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