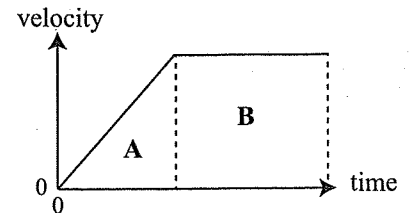


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අනාවරණ පරීක්ෂණය - 2026 இனங்காணல் பரீட்சை - 2026 Diagnostic Test - 2026			
ශ්‍රේණිය தரம் Grade	11	විෂයය பாடம் Subject	Science
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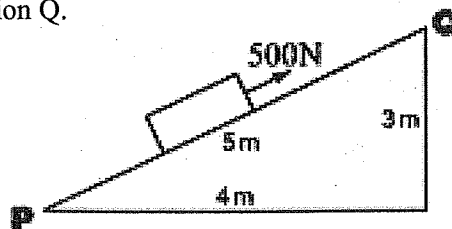
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- Answer all questions
- In each of the questions 1 to 40, pick one of the alternatives (1), (2), (3), (4) which you consider is correct or most appropriate.

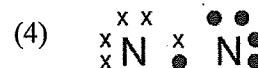
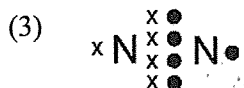
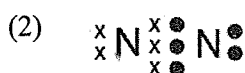
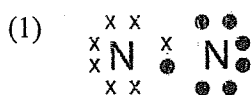
- The cells of a tissue are uninucleated, and the nucleus is located in the center of the cell. It does not possess cross striations. To which of the following tissues do these characteristics belong?
 - Skeletal muscle tissue
 - Smooth muscle tissue
 - Epithelial tissue
 - Cardiac muscle tissue
- In an ion, formed from its atom,
 - The number of electrons is always less than the number of protons.
 - The number of electrons is always greater than the number of protons.
 - The number of protons does not change.
 - The atomic number changes.
- The rate of change of displacement is known as ,
 - Acceleration
 - Velocity
 - Deceleration
 - Speed
- The monosaccharide molecules that make up the disaccharide found in white and red sugar are,
 - Galactose and Glucose
 - Glucose and Glucose
 - Fructose and Glucose
 - Fructose and Galactose
- A use of carbon dioxide gas is,
 - As a rocket fuel
 - To produce margarine from vegetable oils
 - To reduce organic compounds
 - To produce the reducing agent required in iron extraction
- A vehicle weighing 1500 kg starting from rest travels on a flat road and accelerates for 10 s to reach a velocity of 15 m s⁻¹. What was the unbalanced force acting on the vehicle?
 - 225 N
 - 250 N
 - 2250 N
 - 22500 N
- Select the answer containing a water-soluble compound and a water-insoluble compound respectively.
 - Fructose, Maltose
 - Glycogen, Cellulose
 - Glucose, Glycogen
 - Lactose, Galactose
- The velocity-time graph related to the motion of a vehicle is shown here. Which part represents the vehicle traveling with uniform acceleration?
 - A
 - B
 - A + B
 - B - A



09. Which chemical transformation occurs in green plants but not in animals?
- (1) Glucose $\longrightarrow$ Cellulose (2) Glucose $\longrightarrow$ Glycogen
(3) Glycogen $\longrightarrow$ Glucose (4) Glycogen $\longrightarrow$ Cellulose
10. Select the correct statement regarding atoms.
- (1) The shells located in the atom are also known as 1, 2, 3, 4... or K, L, M, N... respectively from the outside towards the nucleus.
(2) The energy of energy levels gradually decreases as you move away from the nucleus.
(3) The gap between energy levels decreases as you move away from the nucleus.
(4) The maximum number of electrons that can exist in the M energy level is 8.
11. Several characteristics of two animals marked as A and B are given below.
- A - The first animal phylum where the body cavity called a coelom developed.
B - There is a cavity called the coelenteron inside the body which acts as the digestive tract. The phyla to which A and B belong respectively are,
- (1) Cnidaria and Annelida (2) Annelida and Mollusca
(3) Annelida and Arthropoda (4) Annelida and Cnidaria
12. $\text{FeSO}_4 + 2\text{NaOH} \longrightarrow \text{Fe(OH)}_2 + \text{Na}_2\text{SO}_4$.
- The mass of Na_2SO_4 obtained from 1 mole of NaOH is, (Fe=56, S=32, Na=23, O=16, H=1)
- (1) 20 g (2) 40 g (3) 42 g (4) 71 g
13. Using a force of 500 N, an object is pushed along an inclined plane from position P to position Q as shown in the figure. Find the work done in pushing it from position P to position Q.
- (1) 1500 J
(2) 2000 J
(3) 2500 J
(4) 4000 J

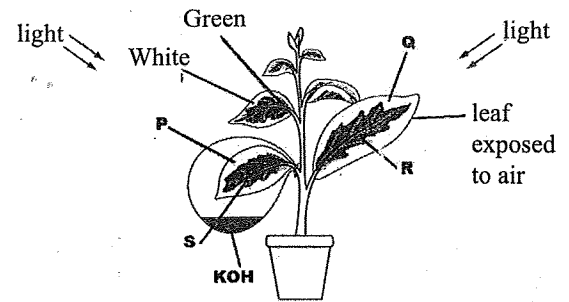


14. The relative molecular mass of Calcium Carbonate (CaCO_3) is 100 g. Find the number of Ca^{2+} ions contained in 10 g of Calcium Carbonate. (CaCO_3) = 100
- (1) 6.022×10^{24} (2) 6.022×10^{23} (3) 6.022×10^{22} (4) 6.022×10^{21}
15. Select the choice that shows the correct dot-and-cross diagram of the Nitrogen molecule.



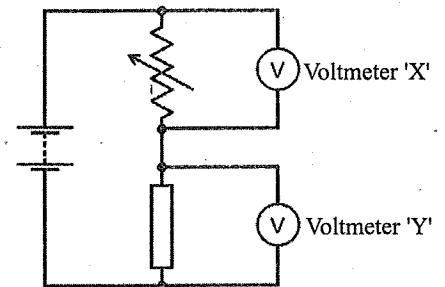
16. An experiment was conducted using a plant with variegated leaves as shown in the figure to test the factors required for photosynthesis.

To which part of the leaf (among P, Q, R, S) is only one factor required for photosynthesis not received?



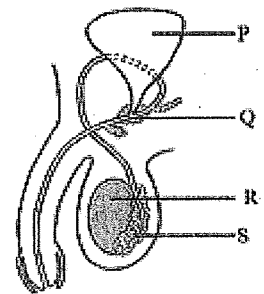
- (1) P and Q
(2) P and R
(3) Q and S
(4) R and S
17. Which of the following statements regarding the menstrual cycle is correct?
- (1) The series of events in the menstrual cycle occurs around one main location in the body.
(2) It takes approximately 56 days to complete one menstrual cycle.
(3) During the follicular phase, the secretion of estrogen hormone from the ovary also occurs.
(4) During the proliferative phase, the body temperature also increases slightly.

18. As shown in the figure, two voltmeters X and Y are connected to measure the potential difference across the rheostat and the fixed resistor respectively. Then the rheostat was adjusted so that its resistance value decreases. Which answer correctly shows the change in the readings of voltmeters X and Y?



- (1) X: Decreases, Y: Decreases
(2) X: Decreases, Y: Increases
(3) X: Increases, Y: Decreases
(4) X: Increases, Y: Increases
- * Question number 19 and 20 are based the male reproductive system shown in the figure.

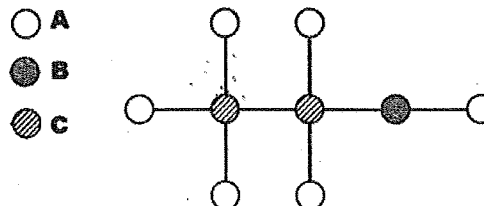
19. The functions performed by R and S respectively are,
- (1) Temporary storage of sperm and providing nutrition to sperm.
(2) Providing nutrition to sperm and temporary storage of sperm.
(3) Production of sperm and temporary storage of sperm.
(4) Temporary storage of sperm and production of sperm.



20. Q represents,
- (1) Seminal vesicle
(2) Prostate gland
(3) Sperm duct (vas deferens)
(4) Pair of Cowper's glands

21. The figure shows an organic compound made of three different elements A, B, and C. Select these elements A, B, and C.

- (1) A-Carbon, B-Hydrogen, C-Oxygen
(2) A-Hydrogen, B-Oxygen, C-Carbon
(3) A-Hydrogen, B-Carbon, C-Oxygen
(4) A-Oxygen, B-Carbon, C-Hydrogen



22. The main component containing iron in iron ore is,
 (1) Hematite (2) Calcite (3) Limestone (4) Coke

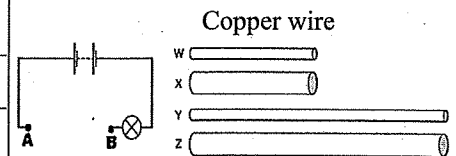
23. Which of the following combinations regarding physical quantities is/are correct?

	Physical quantity	Vector/ Scalar
A	Pressure	Scalar
B	Momentum	Vector
C	Weight	Vector

- (1) A only (2) A and B only (3) A and C only (4) All A, B, and C

24. An activity was carried out to find the factors affecting the resistance of a conductor. Copper wires with different cross-sections and lengths are placed between terminals A and B of the circuit, and the current flowing through the ammeter is recorded. If the scales shown for the wires are equal, select the option where the minimum maximum current (ammeter reading) is observed.

	Minimum current that flows through the ammeter	Maximum current that flows through the ammeter
(1)	Y	W
(2)	Z	W
(3)	Y	X
(4)	Z	X



25. Consider the following statements regarding the endoplasmic reticulum.

A - It is a structure arranged as a series of flat discs contained within the cytoplasm.

B - The function of the Rough Endoplasmic Reticulum is to provide sites for protein synthesis.

C - The function of the Smooth Endoplasmic Reticulum is to produce and transport lipids and steroids.

Which of these statements are true?

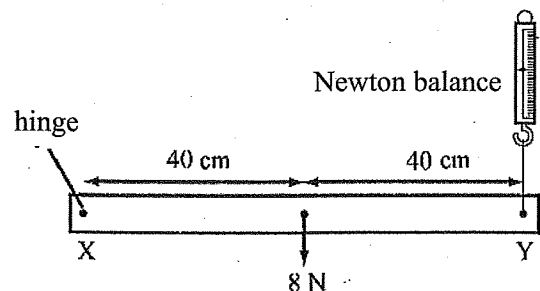
- (1) C only (2) A and B only (3) B and C only (4) A and C only

26. The process of producing energy from stored food within living cells is,

- (1) Respiration (2) Nutrition (3) Excretion (4) Growth

27. A rod weighing 8 N is pivoted at point X and held in equilibrium by a Newton balance as shown in the figure. What is the reading on the Newton balance?

- (1) 3.2 N (2) 4 N
 (3) 6.4 N (4) 8 N

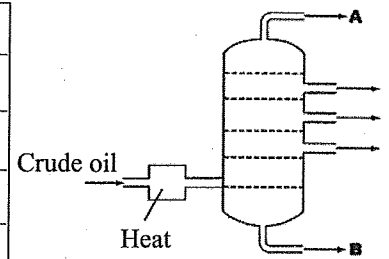


28. Among the following factors required for photosynthesis, which are used as raw materials?

- (1) Chlorophyll and sunlight (2) Chlorophyll and water
 (3) Chlorophyll and carbon dioxide (4) Carbon dioxide and water

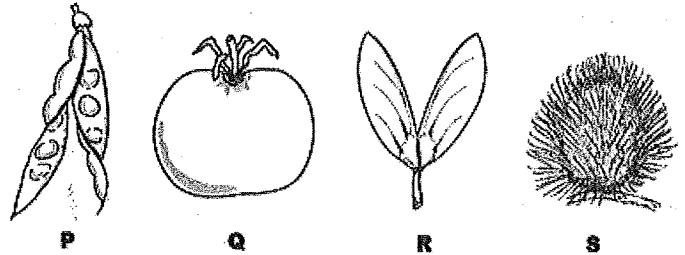
28. Among the following factors required for photosynthesis, which are used as raw materials?
 (1) Chlorophyll and sunlight (2) Chlorophyll and water
 (3) Chlorophyll and carbon dioxide (4) Carbon dioxide and water
29. For an object to be in equilibrium under three parallel forces,
 A - One force must act in the opposite direction to the other two forces.
 B - The resultant of two forces must be equal in magnitude to the third force.
 C - The lines of action of the three forces must meet at a single point.
 Which of these statements are true?
 (1) A only (2) A and B only (3) B and C only (4) A and C only
30. Catalysts are widely used for various industries and industrial processes. The catalyst used to produce margarine by hydrogenating unsaturated fats is,
 (1) Nickel (2) Platinum (3) Porous iron (4) Vanadium pentoxide
31. The figure shows a distillation tower used to refine crude oil. Select the answer containing the components separated from locations A and B of the tower.

	Component A	Component B
(1)	Low boiling point - Tar	High boiling point - petroleum gas
(2)	High boiling point - Tar	Low boiling point - petroleum gas
(3)	Low boiling point - petroleum gas	High boiling point - Tar
(4)	High boiling point - Petroleum gas	Low boiling point - Tar



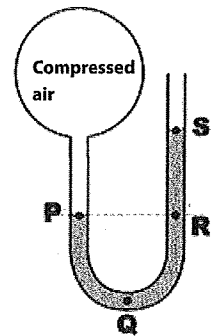
32. Several fruits observed by a student during a field study are shown in the figure. Which fruits are dispersed by animals?

- (1) P, Q
 (2) Q, S
 (3) P, S
 (4) Q, R



33. As shown in the figure, a balloon containing compressed air is connected to one arm of a U-tube filled with water. At which point among P, Q, R, and S is the pressure highest in the water?

- (1) P
 (2) Q
 (3) R
 (4) S

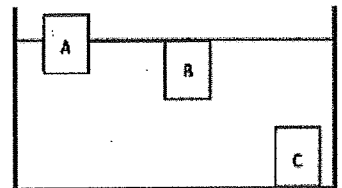


34. Three forces applied to a box kept on a table are shown in the figure. What is the resultant force of the three forces?



- (1) 0 N (2) 20 N (3) 30 N (4) 50 N

35. A solution was made by adding 125cm^3 distilled water to 25cm^3 of pure ethyl alcohol. What is the volume fraction of ethyl alcohol in this solution?
- (1) 0.16 (2) 0.2 (3) 0.25 (4) 0.9
36. Several glass items required to prepare standard solutions in the laboratory are shown below.
A - Beaker, B - Volumetric flask, C - Watch glass, D - Funnel.
Which of the above glass items are most essential to prepare a standard solution?
- (1) A, B, D only (2) B, C, D only (3) A and B only (4) All A, B, C, and D
37. Which of the following statements regarding the static, limiting, and dynamic states of frictional force is **false**?
- (1) The friction that acts before motion begins is called static friction.
(2) As the applied force increases, the static frictional force also gradually increases up to a maximum value.
(3) Dynamic frictional force is slightly greater than limiting frictional force.
(4) Dynamic friction is the frictional force acting against the motion of a moving object.
38. Consider the following statements regarding intermolecular bonds.
A - Water exists as a liquid at room temperature due to intermolecular attraction forces.
B - The intermolecular attraction forces between water molecules are not as strong as the covalent bonds between oxygen and hydrogen atoms in the molecule.
C - Due to the intermolecular attraction forces between water molecules, water has a lower density than ice.
Which of the above statements are true?
- (1) A and B only (2) A and C only (3) B and C only (4) All A, B, and C
39. The way three solid objects of equal volume but different weights exist in water is shown in the figure.
Which statement regarding the upthrust on the three objects is true?
- (1) The weight of object A is less than the upthrust exerted by water on the object.
(2) The upthrust exerted by water on objects B and C is equal.
(3) The weight of object C is less than the upthrust exerted by water on the object.
(4) The upthrust exerted by water on objects A and B is equal



	Inherited disorder	The main cause for the disorder
(1)	Albinism	caused by a mutation in a gene located on a sex chromosome.
(2)	Red-green color blindness	caused by a sex-linked recessive gene
(3)	Thalassemia	caused by a sex linked recessive gene
(4)	Hemophilia	caused by a sex linked dominant gene

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මேல் மாகாணக் கல்வித் திணைக்களம்
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 Department of Education - Western Province

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Diagnostic Test - 2026

1058

ශ්‍රේණිය } **11**
 Grade }

විෂය } **Science**
 பாடம் }
 Subject }

පත්‍රය } **II**
 வினாத்தாள் }
 Paper }

කාලය } **3 hours**
 காலம் }
 Time }

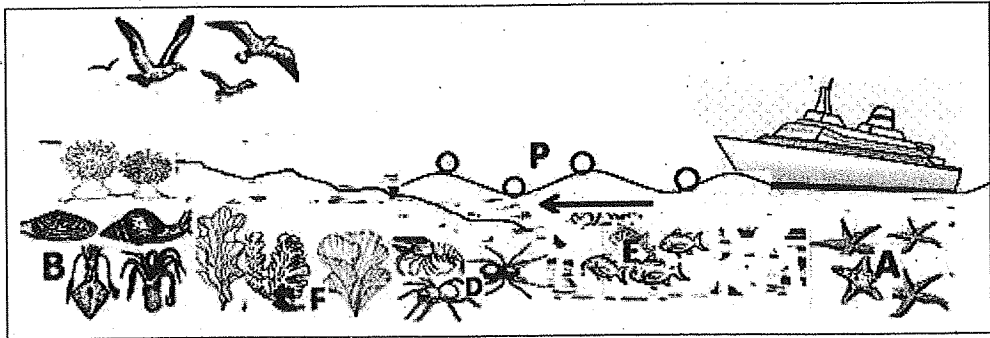
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 Index No. }

- Answer all four questions in part A, in the space provided.
- Of the questions in part B, answer 3 questions only.

Part A - Structured Essay

01. A A picture of a coastal ecosystem is given below.
- i. Complete the table below based on the picture. (03 marks)



Letter	Animal phylum	Characteristic of the phylum
A		Penta radial symmetry
B	Mollusca	
Sea anemone		
.....	Arthropoda	

- ii. Solar energy obtained by plant F is stored within the plant.
- a. Write the balanced chemical equation related to this process. (01 mark)
-
- b. Identify the group of organisms that contributes to fixing the highest percentage of solar energy reaching the ocean. (01 mark)
-

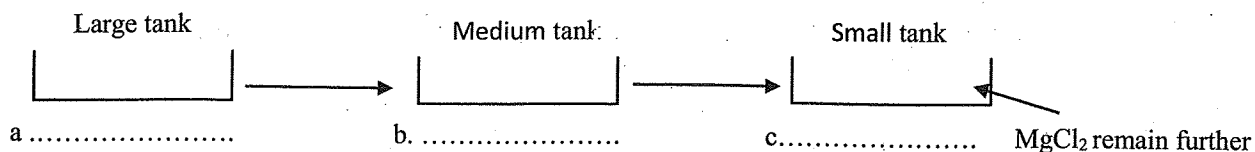
- B. The ocean is a mixture consisting of many types of salts.
- i. Name the type of salt most commonly found in seawater. (01 mark)
- ii. When separating water and salt from seawater, water is removed as vapour. The two processes by which water turns into vapour in this instance are, (01 mark)
- a. Separating water from seawater.
- b. Separating salt from seawater.

- iii. Name one geographical factor and one environmental factor each that should be present when establishing a saltern near the ocean. (01 mark)

Geographical factor -

Environmental factor -

- iv. State the salts that precipitate in each of these tanks during salt production. (01 mark)



- v. Arrange the salts precipitated above in increasing order of solubility. (01 mark)

.....

- C. In the picture of the coastal ecosystem, P represents a group of styrofoam balls on a fishing net holder.

- i. a. Mark the direction of motion of the P balls in the picture when ocean waves travel in the direction indicated by the arrow. (01 mark)

.....

- b. Based on the above observations, name the type of mechanical wave that ocean waves belong to. (01 mark)

.....

- c. The sound of the vessel is transmitted through water as well as air. Draw a diagram and explain how particles vibrate during the transmission of sound. (01 mark)

.....

- ii. The vessel directs ultrasonic waves to detect the location of shoal of fish E. The time taken for it to reflect back is 2 seconds. (Speed of sound in sea water is 1500 m s^{-1})

- a. At what depth from the vessel is the shoal of fish located? (01 mark)

.....

- b. The volume of the submerged part of the vessel is 10 m^3 . Calculate the upthrust force exerted by seawater on this vessel. (Density of seawater is 1025 kg m^{-3} and gravitational acceleration is 10 ms^{-2} .) (01 mark)

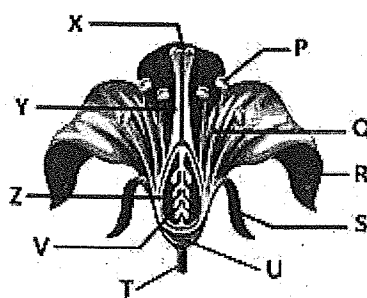
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2. A. A diagram of a typical flower drawn after observing parts of several flowers is shown below.

- i. From the parts observed, write the English letter corresponding to the information given below. (06 marks)

- a. Production of pollen.
- b. Receiving pollen.
- c. Carrying pollen to the ovary.
- d. Occurrence of fertilization.
- e. Attracting insects for pollination.
- f. Structures that remain without falling off from the plant even after fertilization of the ovule in some plants.



- ii. If this flower shows adaptations for cross-pollination, state an adaptation (01 mark)
-
- iii. Mention one way in which sexual reproduction is important to a plant. (01 mark)

- iv. What is known as parthenocarpy? (01 mark)

.....

B. The following diagram shows a dicotyledonous plant.

i. a. Name the meristematic tissue located in part A of the plant. (01 mark)

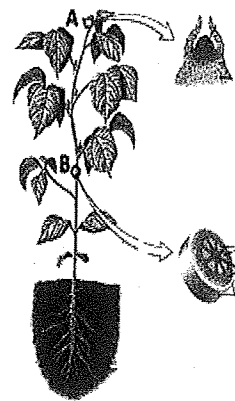
b. State one benefit the plant receives due to the activity of this tissue. (01 mark)

ii. Name a simple permanent tissue formed from meristematic tissues. (01 mark)

iii. a. Name the meristematic tissue located in part B of the plant. (01 mark)

b. State one benefit the plant receives due to the activity of that tissue. (01 mark)

iv. Name a complex permanent tissue formed from meristematic tissues. (01 mark)



15

3. A. Elements have many periodic trends. First ionization energy and electronegativity are few of them. The following graph shows the variation of the first ionization energy of elements from atomic number 1 to 20 in the periodic table.

Answer the following questions based on the graph.

i. Write the appropriate elements for the blank spaces in the above graph. (03 marks)

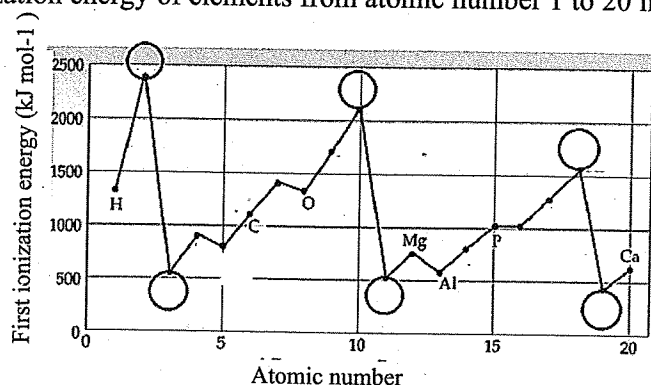
ii. What is the unit used to measure the first ionization energy? (01 mark)

iii. Write an element that has first ionization

energy value between 1500 kJ mol^{-1} – 2000 kJ mol^{-1} . (01 mark)

iv. Write the chemical equation for the formation of gaseous Na^+ by removing an electron from Na atom in the gaseous state. (02 marks)

v. Explain the reason for the decrease in the first ionization energy of elements when going down a group. (02 marks)



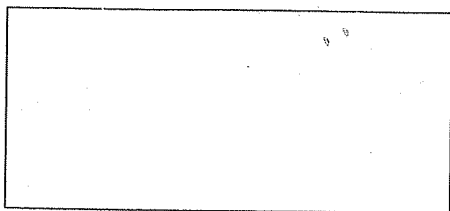
B. The figure shows a molecule of a chemical compound with covalent bonds. Dots and crosses are used to represent the electrons participating in the formation of bonds in the valence shells of the atoms in the molecule.

i. What is the chemical name of this molecule? (01 mark)

ii. How many pairs of bonding electrons are there in this molecule? (01 mark)

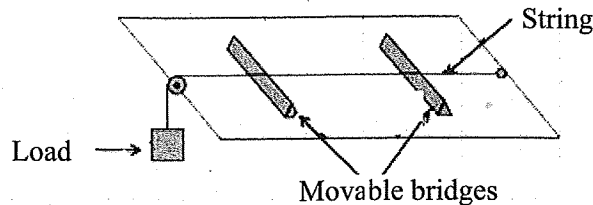
iii. What is the name given to the way in which this molecule represented? (01 mark)

iv. Draw another way the structure of this molecule can be represented and state its name below. (02 + 01 marks)



15

4. A. The figure shows an instance where a sound is produced by vibrating a string.



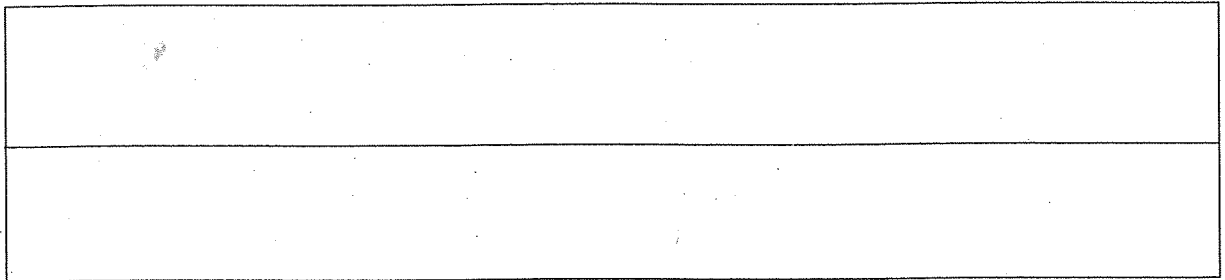
- i. State whether the pitch of the sound decreases, increases, or does not change when the changes are made. (03 marks)
 - a. Increasing the value of the load -
 - b. Increasing the distance between the two bridges -
 - c. Vibrating the string with greater force -
 - ii. What type of mechanical wave is produced when this string is vibrated? (01 mark)

.....
 - iii. State 2 differences between this mechanical wave and an electromagnetic wave. (02 marks)

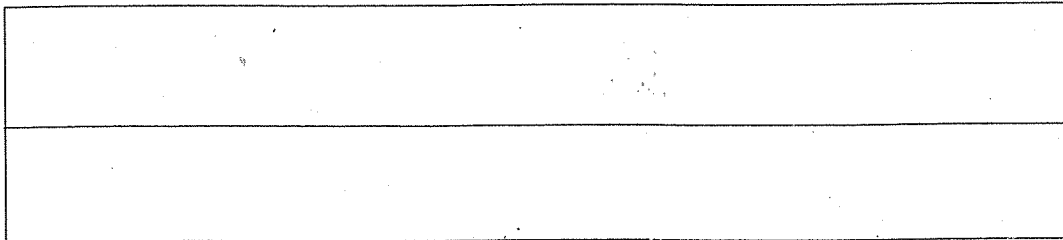
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.....
 - iv. The velocity of a certain wave is 330 m s^{-1} . The distance between two successive crests of the wave is 3 m. Calculate the frequency of the wave. (02 marks)

.....
- B. At a certain instance, the distance between a lens and an object and the characteristics of the image formed by the lens are given below.
- The distance from the object to the lens is 10 cm.
 - It is an inverted image.
 - The image formed is equal to the size of the object.
- i. What is the type of lens used here? (01 mark)
 - ii. Draw the ray diagram related to the formation of the image showing the above characteristics. (02 marks)



- iii. What is the distance between the image and the lens at that instance? (01 mark)
- iv. If a mirror is used to obtain an image with the characteristics mentioned above, state the type of the mirror. (01 mark).....
- v. Using the mirror type you mentioned in iv above, draw the rough ray diagram relevant to that instance. (02 marks)



Part B

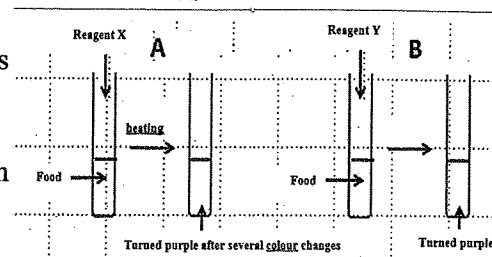
- Answer three questions only, from questions No. 5,6,7,8 and 9

1058

05. A. Several food items stored in a refrigerator are shown below.

Honey
Spinach
Eggs
Beans
Ripe Banana
Curd

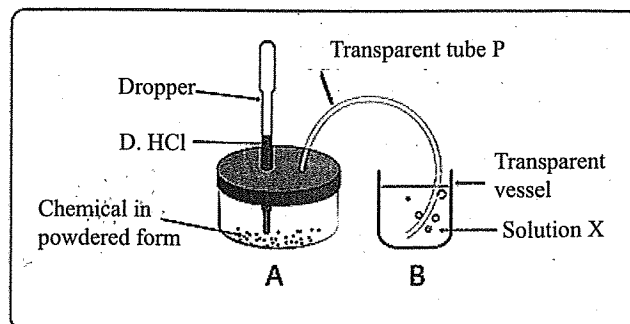
- a. Name two main organic compounds contained in living matter excluding nucleic acids. (01 mark)
 - b. Separately write the elements that are always contained in the two organic compounds you mentioned in (i) a. (01 mark)
 - c. From the given food items, select and write a food item rich in each of the organic compounds you mentioned. (01 mark)
 - d. Name a type of monosaccharide found in honey. (01 mark)
- ii. Name the metallic element that contributes to the formation of red blood cells. (01 mark)
 - iii. What is the name given to the chemical substances that catalyze all biochemical reactions occurring within living beings? (01 mark)
 - iv. Given below are two tests performed to identify nutrients contained in two types of food.
 - a. Name reagents X and Y. (01 mark)
 - b. From the food items in the refrigerator, write 2 food items that can be used to prepare food in instances A and B. (01 mark)
 - v. What is the observation when a small amount of the cream on top of curd is taken and mixed well with Sudan III solution (01 mark)



B. Carbon dioxide, water, and sunlight can be identified as essential factors for photosynthesis in plants. Plants are adapted to obtain these factors optimally.

- i. Apart from the factors mentioned above, name another factor required for photosynthesis. (01 mark)
- ii. A main product named P is produced during photosynthesis. It is temporarily stored in the leaf as a substance named Q, later transported through the phloem tissue as a substance named R, and stored in storage tissues.
- iii. What are the types of carbohydrates represented by the letters P, Q, and R? (03 marks)
- iv. The main organs where photosynthesis occurs in a plant are the leaves.
 - a. What is the name of the structures through which atmospheric carbon dioxide enters the leaves? (01 mark)
 - b. What is the name of the method by which gases enter? (01 mark)
- v. a. State the path in order through which water required for photosynthesis travels from the soil to the leaves. (01 mark)
- b. Write the adaptation present for this water to spread well throughout the leaf. (01 mark)
- vi. a. It is mentioned above that light is a factor required for photosynthesis. For what purpose is light required here? (01 mark)
- b. Write 2 adaptations in plants to receive a greater amount of light for the leaves. (01 mark)
- c. Name 2 types of cells among the cells contained in a leaf that contribute to photosynthesis. (01 mark)

06. A. The figure below shows a setup prepared to produce and identify a gas using a small quantity of chemicals in the laboratory. The reaction starts by squeezing the rubber part at the top of the dropper to let the solution inside fall into container A,

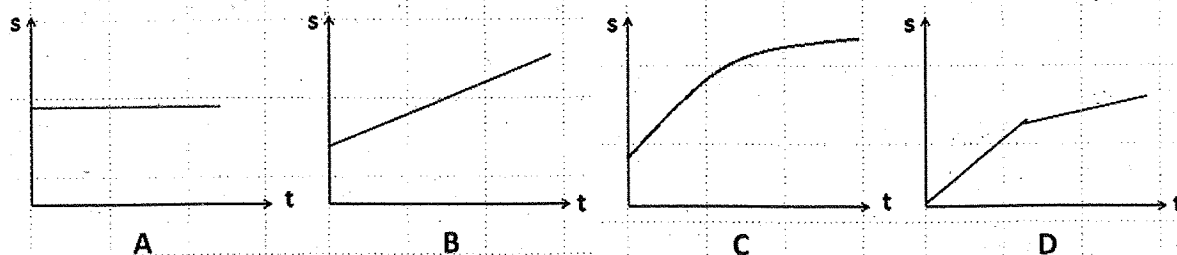


- i. If the pair of chemicals used is HCl and CaCO_3 , what is the gas that bubbles through solution X? (01 mark)
- ii. The produced gas travels through the P tube and bubbles through the liquid in vessel B.
 - a. Name solution X. (01 mark)
 - b. What is the observation that can be seen when gas bubbles through the solution? (01 mark)
 - c. What is the conclusion that can be reached accordingly? (01 mark)
- iii. Write down the reaction between the pair of chemicals using a balanced chemical equation. (02 marks)
- iv. According to the nature of the chemical change occurring, what type of chemical reaction is this? (01 mark)
- v. a. Write two uses of the gas produced using the above setup. (02 marks)
- b. What can you say about the solubility of this gas in water? (01 mark)

B. A student performed various experiments using the substances Sodium carbonate, Calcium chloride, Sulphur, Ammonium chloride, Magnesium, Zinc, and Copper sulphate.

- i. Which two are metallic elements among the substances mentioned above? (01 mark)
- ii. Among the given substances, one substance forms a colored solution when dissolved in water. What is that substance? (01 mark)
- iii. a. Write the chemical symbol for Magnesium. (01 mark)
- b. To which group of the periodic table does Magnesium belong? (01 mark)
- c. Write the electron configuration of Magnesium. (01 mark)
- iv. Among the elements mentioned above, when placed in a test tube and heated,
 - a. Write a substance whose weight decreases. (01 mark)
 - b. Write a substance whose weight increases. (01 mark)
- v. a. To an aqueous solution of which of the given substances, when Zinc is added, is a metal obtained? (01 mark)
- b. Show the reaction occurring in v. a. above through a balanced chemical equation. (02 marks)

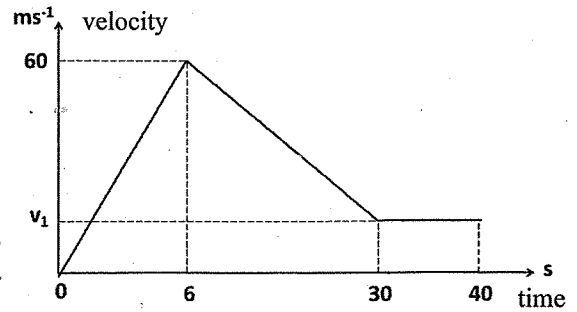
07. A. Among the competitions organized for the Sinhala and Tamil New Year festival, events like cross-country running, cycling, and the 100m sprint were held. Answer the following questions based on the nature of motion of a rider in the cycling competition. Four displacement (s) - time (t) graphs related to four instances are shown below.



- i. Explain the difference between the physical quantities displacement and distance. (02 marks)
- ii. From the above graphs, select the graph matching each form of motion below and write the corresponding English letter. (04 marks)
 - a. Uniform velocity
 - b. At rest
 - c. Moving with two different uniform velocities
 - d. Change of velocity with time

B. During a parachute display held at the festival, a parachutist jumps from a helicopter stationary in the sky. He opens the parachute after 6 seconds. (Assume his entire motion occurs vertically.)

- What physical quantity can be determined using the gradient of a velocity-time graph? (01 mark)
- What physical quantity can be obtained by the area formed with the time axis of the velocity-time graph? (01 mark)
- Find the acceleration of the parachutist. (02 marks)
 - Find his displacement during that acceleration time (02 marks).

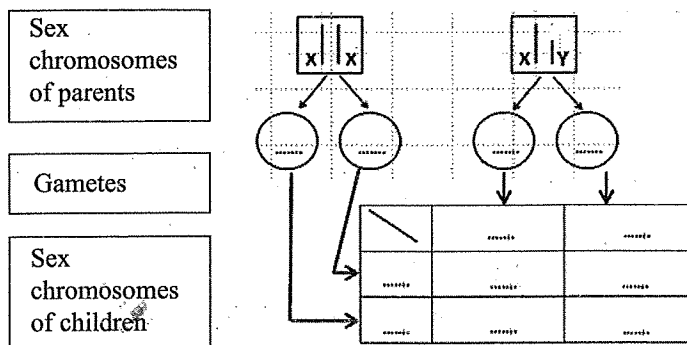


- The displacement achieved during the time interval from 6 s to 30 s is 792 m. Find the velocity achieved at the end of 30 seconds. (02 marks)
- Find the distance from the point where the parachute jump started to the ground. (02 marks)

C. A wooden box brought for the festival is pulled at a uniform velocity on a rough horizontal ground by applying a horizontal force F . The frictional force exerted by the ground is F_s . (Consider gravitational acceleration as g .)

- If the normal reaction acting on the wooden box of mass m is R , draw and mark the manner in which all forces act on your answer sheet. (02 marks)
- If the mass of the wooden box is 20 kg and the uniform velocity of motion is 2 m s^{-1} , find the momentum of the gift box. (02 marks)

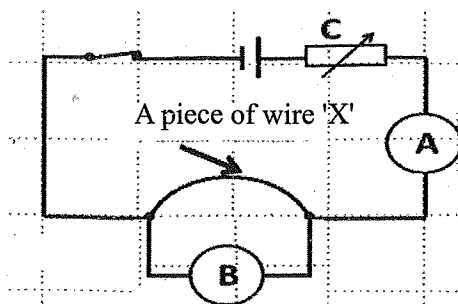
08. A. A diagram related to the way sex determination occurs in humans is shown below.



- Draw and complete that diagram on your answer sheet. (03 marks)
- Name 2 genetic disorders caused by sex-linked inheritance. (02 marks)
- Write one symptom of a disorder you named above. (01 mark)
- Selecting the correct word from within the brackets, correctly construct the statements in a, b, c, d and write them on your answer sheet. (04 marks)
 - The (phenotype / genotype) of a tall garden pea plant is the (phenotype / genotype) TT or Tt.
 - The tall pea plant indicated as TT is (homozygous / heterozygous) for the trait and the genes are (recessive / dominant).
 - The short pea plant indicated as tt is (homozygous / heterozygous) for the trait and the genes are (recessive / dominant).
 - The tall pea plant indicated as Tt is (homozygous / heterozygous) for that trait and the genes are (recessive / dominant).

- B. A circuit diagram prepared based on an experiment you performed in the laboratory and the readings obtained related to it are shown below. Answer the questions asked based on it.

Current (I)	Voltage (V)
0.1	0.4
0.2	0.8
0.3	1.0
0.4	1.6
0.5	2.0



- What are the two instruments named as B and C in the circuit? (01 mark)
 - When the switch is closed, draw a rough sketch of the circuit and show the direction of current flow within the circuit. (01 mark)
 - Write the functions of instruments A, B, and C separately. (03 marks)
 - Write two points to be considered when connecting instrument B to the circuit. (02 marks)
 - Using the above readings, draw a graph showing potential difference against current. (02 marks)
 - Using the readings, find the resistance of wire piece X. (01 mark)
09. A. In the laboratory, to prepare a standard aqueous solution of NaOH, 8 g of NaOH was dissolved in distilled water to make a 100 cm³ solution. (Na = 23, O = 16, H = 1)
- What is a standard solution? (01 mark)
 - What are the laboratory instruments used for the following instances? (03 marks)
 - For measuring 8 g of NaOH
 - For preparing the 100 cm³ solution
 - For washing the watch glass and funnel
 - Calculate the concentration of the prepared solution in mol dm⁻³. (02 marks)
 - Write an observation felt by the hand when touching that vessel as NaOH dissolves in water. (01 mark)
 - A drop of the prepared solution was taken and placed separately on red and blue litmus papers. On which litmus paper can a color change be expected? (01 mark)
 - Express the composition of the prepared solution in terms of mass/volume. (02 marks)
- B. Several principles of physics have been used in making a bicycle. Answer the questions based on the parts named in the bicycle shown in the following diagram.
- When riding a bicycle, (04 marks)
 - Write an instance where friction is helpful.
 - Mention a method used to increase friction.
 - Write an instance where friction is a hindrance to motion.
 - Mention a method reduce friction here.
 - What is known as couple of forces? (01 mark)
 - Due to a couple of forces, does an object undergo linear motion or rotational motion? (01 mark)
 - State an instance where a couple of forces is used when riding a bicycle. (01 mark)
 - The pedal arm (pedal handle) is 20 cm long. The cyclist rotates the pedal in a semi-circle by applying a uniform force of 500 N.
 - Find the moment of force acting here. (02 marks)
 - Without changing the force, state a change that can be made to the pedal to increase the moment of force. (01 mark)

