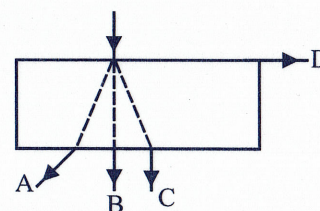
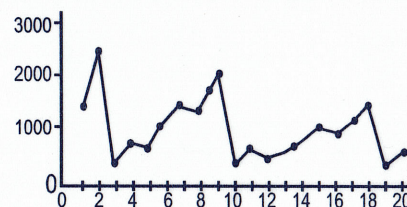
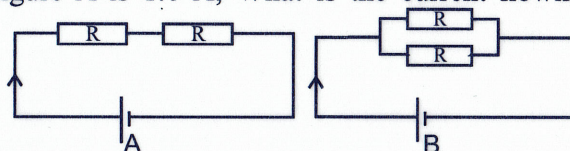
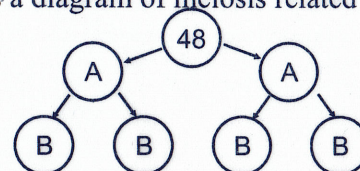
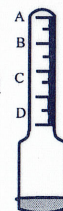


34 E I

Time : 01 hours

- Page 01 of 04

13. ❖ Solvent X dissolves well in solvent Y but it dissolves slightly in solvent Z.
❖ Solvent Y and Solvent Z are immiscible.
If solvent Y is provided, the most appropriate method for separating X from a mixture of X and Z.
(1) Crystallization (2) Chromatography (3) Evaporation (4) Solvent extraction
14. When the hydrometer shown in the figure below is immersed in a measuring cylinder filled with distilled water, it sinks up to position C. If concentrated salt water is used instead of distilled water,
(1) Sinks up to position A (2) Sinks up to position B
(3) Sinks up to position C (4) Sinks up to position D
15. A Gamete mother cell of the chimpanzee has 48 chromosomes. Below is a diagram of meiosis related to that. Nnumbers indicated by letters A and B are,
(1) 48 and 48 (2) 48 and 24
(3) 24 and 24 (4) 24 and 12
16. The composition of an aqueous solution of sodium hydroxide is 40 g dm^{-3} . Its concentration is,
(1) 40 moldm^{-3} (2) 4.0 moldm^{-3} (3) 1 moldm^{-3} (4) 0.1 moldm^{-3}
17. If the current flowing through the circuit shown in figure A is 1.0 A, What is the current flowing through circuit B?
(1) 0.5 A (2) 1.0 A
(3) 2.0 A (4) 4.0 A
18. What is the requirement of boiling the leaf first, in the starch test ?
(1) Losing the permeability of the cell wall (2) Losing semi permeability of plasma membrane
(3) Removing of chlorophyll (4) Destroying the cell
19. The graph shows the variation of first ionization energy of 1- 20 elements in the periodic table. A pair of elements with lower and higher first ionization energy than nitrogen is,
(1) Carbon and oxygen (2) Carbon and fluorine
(3) Oxygen and fluorine (4) Magnesium and aluminum
20. Which statement correctly describes the device and its rule ?
(1) Moving coil magnetic microphone - Fleming's right hand rule
(2) Loud speaker - Fleming's right and rule
(3) Transformer - Fleming's left hand rule
(4) Alternating current dynamo - Fleming's left hand rule
21. The figure shows a light ray passing through a glass block . Which letter correctly represents the ray coming out of the glass block?
(1) A (2) B
(3) C (4) D
22. Consider the following statements about processes of human body.
A - Bile is produced in the liver and stored in the gallbladder.
B - Sperms are produced in the seminiferous tubules and stored in the epididymis.
C - Urea is produced in the kidneys and temporarily stored in the bladder.
Which of the above statements is true ?
(1) A and B only. (2) B and C only.
(3) A and C only. (4) A,B and C all.

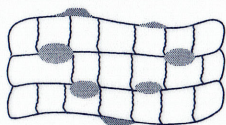


23. During the electrolysis of which of the following solutions, gas bubbles can be observed near both the anode and the cathode?

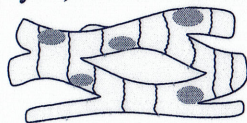
A - Aqueous CuSO_4 solution B - Aqueous NaCl solution C - Acidified water solution

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

24. What are the muscle tissues indicated by A, B and C in the figure respectively. ?



A



B



C

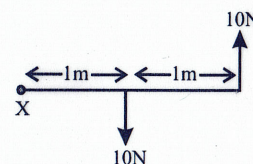
- (1) Smooth muscle, skeletal muscle and cardiac muscle
 (2) Smooth muscle, skeletal muscle and smooth muscle
 (3) Smooth muscle, cardiac muscle and skeletal muscle
 (4) Cardiac muscle, smooth muscle and skeletal muscle

25) Which would not be suitable measure to test the effect of HCl concentration on the rate of reaction between Mg and HCl ?

- (1) Time taken for H_2 gas production to end. (2) Time taken to produce unit volume of H_2 gas.
 (3) Mass of Mg consumed in a minute. (4) Volume of H_2 gas produced in a minute.

26) The figure shows two 10 N forces acting on a rod pivoted by x. Which is the correct statement about the motion of the rod due to those forces?

- (1) The rod remains stationary.
 (2) Rotates counter - clockwise with a moment of 10 N m
 (3) Rotates clockwise with a moment of 10 N m.
 (4) The rod rotates counter - clockwise with a moment of 20 N m



27) Following are the four metals that are extracted based on their reactivity.

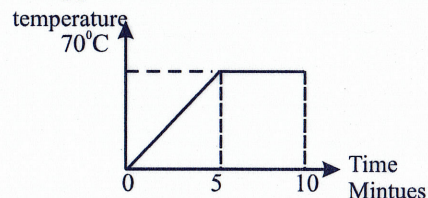
A - Lead B - Tin C - Aluminum D - Sodium

The metals extracted by reducing the oxides of the above metals are,

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

28) The graph shows the change in temperature of a solid when heat is supplied at a constant rate, for 10 minutes. Choose the false statement from the following statements.

- (1) The melting point of this substance is 70°C
 (2) The boiling point of this substance is 70°C
 (3) The freezing point of this substance is 70°C
 (4) The heat supplied in the last five minutes is called latent heat.



29) A 240V step down transformer has 2000 turns in its primary coil. what should be the number of turns in the secondary coil to obtain 12V alternating current ?

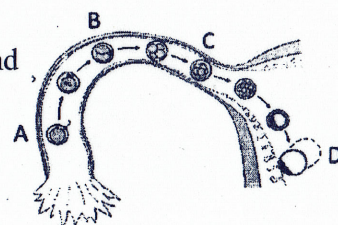
- (1) 20 (2) 100 (3) 200 (4) 2000

30. A characteristic of atoms which form covalent bonds is,

- (1) Always attaining the noble gas configuration in bond formation.
 (2) Becoming noble gas configuration by gaining or removing electrons.
 (3) Often sharing a pair or pairs of electrons to attain noble gas configuration.
 (4) Forming a number of covalent bonds equal to the number of electrons required to always be in the noble gas configuration.

31. A part of an ovary related to fertilization is shown in the figure. fertilization and implantation are represented by which letters respectively ?

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

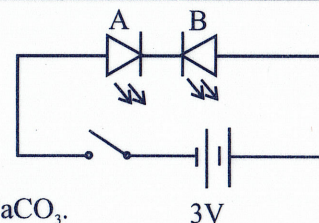


32. Choose the answer that correctly states the following electrical components and their functions.

Equipment	Function
(1) Electricity meter	Protection of electrical equipment from over loads.
(2) MCB	Protection of electrical equipment from lightning accidents.
(3) Distribution box	To measure the electrical energy used
(4) RCCB	Protection of persons from electric shocks

33. The figure shows a circuit made using two LEDs. When the switch is closed.

- (1) Only the A - LED lights up. (2) Only the B - LED light up.
(3) Both A and B LEDs lights up. (4) Both A and B LEDs are off.



34. Consider the following statement and the reason regarding the decomposition of CaCO_3 .

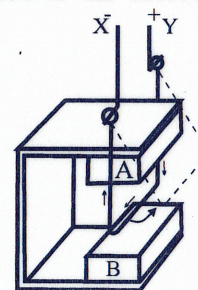
Statement - decomposition of CaCO_3 is an exothermic reaction.

Reason - released heat in the product formation is lower than received heat during the decomposition.

- (1) Both statement and reason are correct. (2) Both statement and reason are incorrect.
(3) Statement is correct. reason is incorrect. (4) Statement is incorrect. reason is correct

35. Figure shows a setup prepared for studying the force on a current - carrying conductor placed in a magnetic field. A wire frame is fixed and can be moved between the terminals of the X and Y conductors. When power is applied, the wire frame moves as shown by the broken lines. Which is the correct answer regarding to the Diagram.

	A	B	more suitable cell
(1)	North pole	South pole	1.5V
(2)	South pole	North pole	1.5V
(3)	North pole	South pole	9V
(4)	South pole	North pole	9V



36. There is a belief that children born from marriages among blood relatives suffer from genetic diseases. The most likely genetic condition among blood relatives is,

- (1) Existence of homozygous recessive genes related to diseases
(2) Existence of homozygous dominant genes related to diseases
(3) Presence of heterozygous genes related to diseases
(4) Being more likely to have genetic mutations.

37. A pair of gases that cause acid rain is

- (1) CO_2 and SO_2 (2) SO_2 and NO_2 (3) NO_2 and CO_2 (4) CO_2 and CFC

38. Which of the following is an important point to pay attention to when using antibiotics and Vitamins ?

- (1) Use of antibiotics before the onset of a disease.
(2) Long - term use of vitamins even in the absence of symptoms.
(3) Stop taking antibiotics if the disease is healing.
(4) Not using antibiotics or vitamins without medical advice.

39. What should be considered in the construction of an environmentally friendly house ?

- (1) Getting as much natural air and light as possible.
(2) Using natural materials like wood as much as possible in the construction of the house.
(3) Building the house in a natural environment.
(4) Positioning of doors and windows along east and west directions.

40. Which of the following is an efficient way to use good electrical equipment ?

- (1) Always use the least efficient household appliances.
(2) Using LP gas instead of electric stoves.
(3) Disconnecting the equipment from the circuit immediately after use.
(4) Using remote control to turn off the television.

34 E II

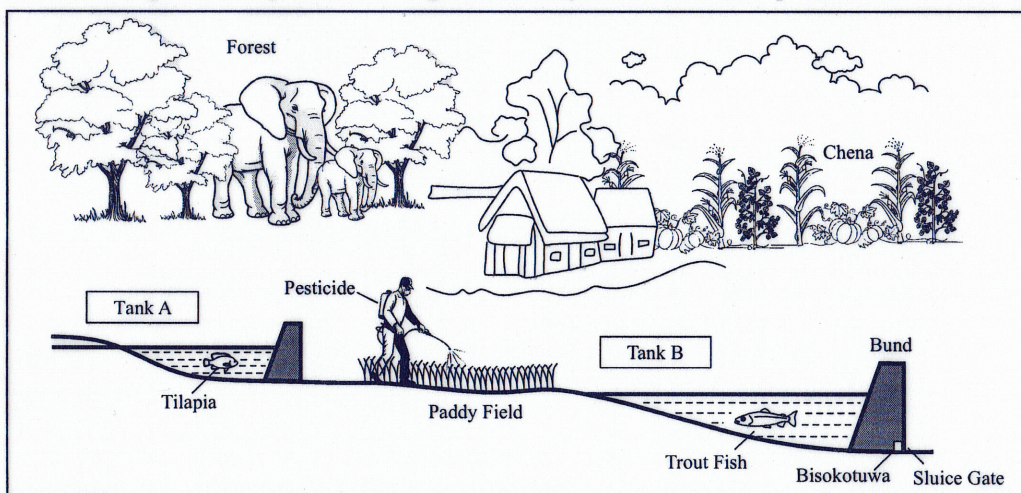
Time : 03 hours

Instructions :

- Write your answers in neat hand writings.
- Answer the four questions in part A, in the space provided.
- Answer only 03 questions out of five questions in part B. Use separate papers to write answers.
- Attach part A and Part B answer script together and hand over

Part A - Structured Essays

1.(A) Below is an image of a city that is being affected by environmental pollution.



Fill in the blanks in the table choosing an example from the diagram that corresponds to each statement below. (05)

Statement	Example
(i) An animal that affects the reduction of bio diversity	
(ii) A place with more potential for eutrophication	
(iii) Area where sustainable agricultural practices are found	
(iv) A zone where a pollutant is susceptible for bioaccumulation	
(v) Effective zone in reducing global warming.	

(vi) The village tank can be known as a unique design of irrigation technology.

(a) What is the irrigation technological structure built in the tank to reduce water pressure ? (01)

(b) What is the possible environmental impact due to PO_4^{3-} ion content, in tank A? (01)

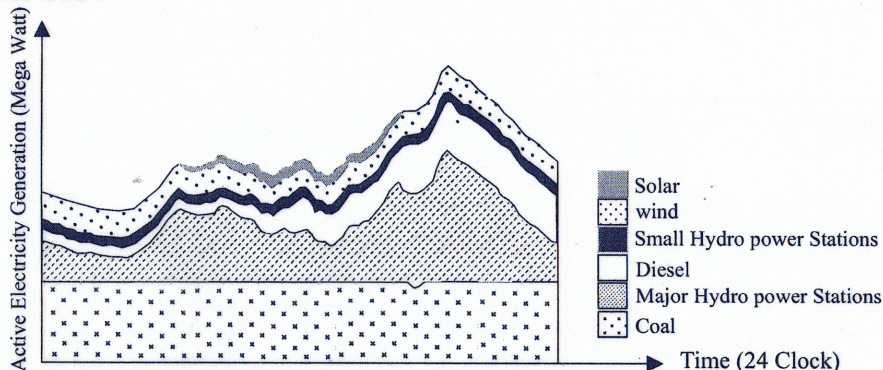
(c) A water sample taken from Tank B was tested to contain high levels of Arsenic. (01)
Name a non-communicable disease that could spread in the area due to that situation.

(vii) Wild elephants coming to village is a serious problem in this area.

a) State an indirect effect of environmental pollution leading to this problem. (01)

(b) Suggest a strategy that can be implemented to prevent human - elephant conflicts. (01)

(B) Below is an analytical graph showing the electricity generation in Sri Lanka on a weekday in September 2024.



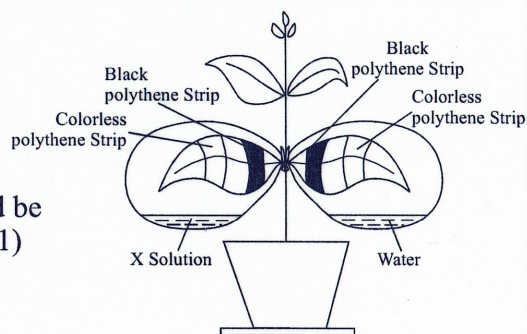
(i) During which hour has highest electricity consumption occurred? (01)

(ii) Which source generates electricity constantly round the clock? (01)

(iii) Mention a weakness of solar power generation. (01)

(iv) The current amount of electricity generated daily should be increased by six Giga Watt hours within the next two decades. Write two sources of energy to focus on. (02)

2. (A) The figure below shows a setup prepared by a group of students to simultaneously test two factors necessary for photosynthesis. The plant was kept dark for 48 hours and the setup was prepared as follows and exposed to sunlight.



(i) If solution X was used for CO_2 absorption, What could be the chemical compound contained in it? (01)

(ii) What is the purpose of covering the leaf with black polythene strip? (01)

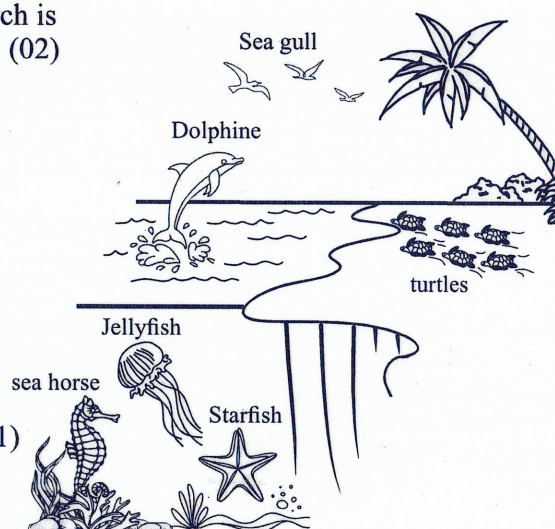
(iii) Make dark the parts that turn blue purple when starch is tested in both leaves A and B. (02)



(iv) Write the balanced chemical equation for photosynthesis. (02)

(B) A picture of the beach and the associated seabed is given below.

(i) Which phylum of vertebrate is not seen in the picture? (01)



- (ii) According to the method of fertilization, classify the organisms mentioned in the picture* as follows, (02)

1. Internal fertilization -
2. External fertilization -

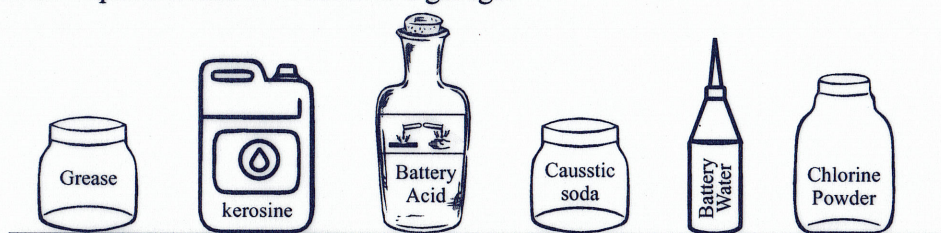
- (iii) Complete the following table regarding the organisms in the picture. (04)

Information	Dolphine	Turtle	Sea gull	Sea horse
Phylum			Aves	
Number of chambers in the heart		3		
Respiratory organ				
Cold blooded or warm blooded				cold blooded

- (iv) Out of the organisms shown in the picture, name the organism with the following characteristics. (02)

- (a) Diploblastic. presents nematocysts :
- (b) The tube feet are used for respiration and locomotion. :

3. Below are some liquids found on a shelf in a garage.



- Fill in the blanks to match the information given in the table. (06)

Information	Solvent/ Solute
(i) The pH paper turn into green colour. Separated by simple distillation	
(ii) Highly corrosive. used for making simple cells.	
(iii) Separated by fractional distillation. Extracted from the lower layers of the fractionating tower.	
(iv) A bleaching agent	
(v) A pair of substances that form a homogeneous mixture when solid and liquid are mixed together.	
(vi) A chemical compound that can be obtained by electrolysis of sea water.	

- (B). Below is a part of the periodic table that was written on a torn piece of paper

	H			
	Li	Be	B	C
	Na	Mg	Al	Si
	K	Ca		

- (i) Name a metal, non- metal and a metalloid out of the above elements. (03)
 - (a) metal - (b) non- metal - (c) metalloid -
- (ii) Which element has the lowest first ionization energy as well as electro negativity? (01)

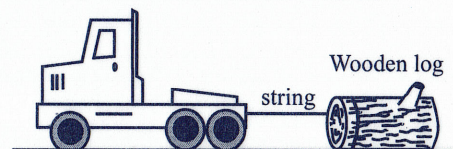
.....
- (iii) Among the elements given in the above table, Write three consecutive elements belonging to the activity series in decreasing order of reactivity. (01)

.....

- (iv) Write down the element extracted by each of the following methods. (03)
- (a) Electrolysis of fused compound -
- (b) Chemical Reduction -
- (c) Simple physical methods -
- (v) Draw the rest of the table above for completing the first 20 elements with their chemical symbols. (01)

4. (A) The picture shows a vehicle being used to haul a wooden log. At this time the vehicle and the log are in stationary.

- (i) Which of Newton's laws of motion can explain the motion of the vehicle in the above situation? (01)



- (ii) In the following cases, write whether the frictional force acting against the motion of the log is static, dynamic or limiting. (03)

Cases	Friction
(a) When the vehicle is at rest	
(b) When the vehicle is just starting to move	
(c) When the vehicle is moving	

- (iii) A constant force of 500N is exerted by the engine of the vehicle, when the car with log is moving with uniform velocity on a straight road.

- (a) What is the acceleration of the vehicle at this time? (01)
- (b) If the string breaks and the log separates from the vehicle while the applied force remains constant, state whether the velocity of the log and the vehicle will decrease, increase or remain constant. (02)

(1) velocity of the vehicle

(2) velocity of the log

- (iv) As a remedy for string breakage, it is suggested to use two strings of the same type instead of a single string

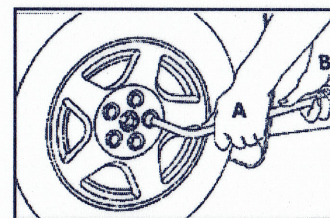
- (a) Do you agree with that suggestion? (01)

- (b) Write an expression for the resultant force F , if the tensions in the two strings are t_1 and t_2 . (01)

- (c) Find the tension of the string t_2 (01)

(B) Figure shows how force is applied to loose the lug nuts of a vehicle wheel

- (i) The hand with which letter should apply force to loose the lug nut more easily.



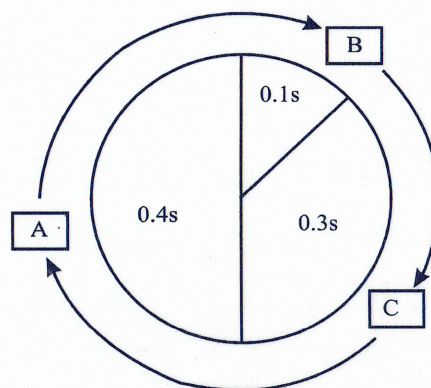
- (01)
- (ii) A force of 100N is applied by the hand at a distance of 25 cm from the axis of rotation. calculate the moment of force required to loose the lug nut.(03)

- (iii) Suggest a strategy that can be used to reduce the applied force below 100 N. (01)

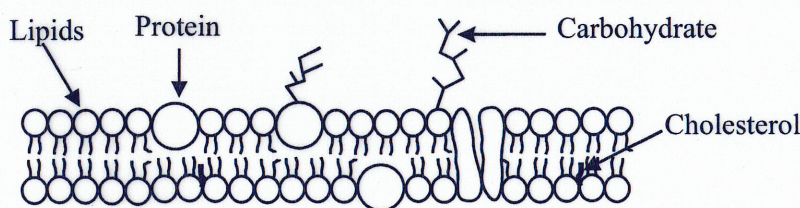
Part B

5. (A) The human cardiac cycle consists of three phases as atrial contraction, ventricular contraction and atrial ventricular relaxation (complete cardiac diastole). A student has illustrated the stages of a healthy person's cardiac cycle as follows.

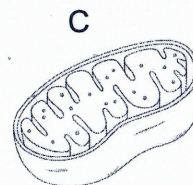
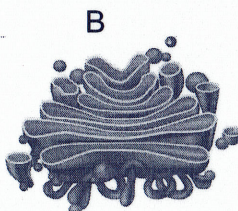
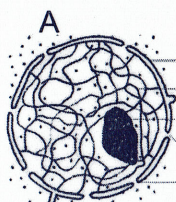
- (i) Name A, B, C respectively. (01)
- (ii) Indicate the stage of cardiac cycle by A, B, C letters for the following. (03)
 - a - Opening the bicuspid and tricuspid valves.
 - b - Opening the semilunar valves
 - c - Hearing lub sound.
- (iii) The pressure exerted on the walls of arteries during which two phases of the cardiac cycle is used to measure blood pressure? (02)
- (iv) Write down the blood pressure of a healthy person in correct form. (01)
- (v) Below is a chart depicting the stages of the above cycle.
 - (a) What is the name of this chart? (01)
 - (b) Name a disease that is diagnosed by doctors using that chart (01)
- (vi) Write an action that can be followed to maintain a healthy heart (01)



(B) Below is a model of plasma membrane presented by a student for a science exhibition.

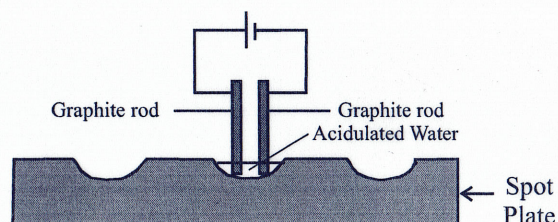


- (i) Which biomolecule is not represented in the model? (01)
- (ii) Among the biomolecules that build up the cell membrane, which biomolecule contains nitrogen? (01)
- (iii) Name two chemicals used to test the presence of nitrogen in that biomolecule. (02)
- (iv) Which cell organelle does not have a cell membrane? (01)
- (v) Name three elements that are present in all bio-molecules which make up the cell membrane. (02)
- (vi) Write the function of each of the following cell organelles. (03)



(20 marks)

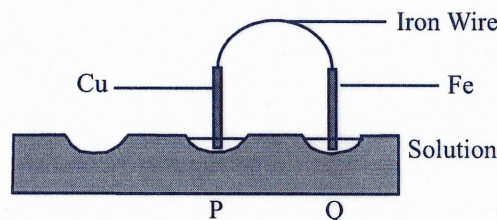
6. (A) Below is a cross-section of a set up prepared by using two pencil rods (graphite) for electrolysis of acidulated water acidified with H_2SO_4 on a spot plate.



- (i) Name three types of ions in the solution. (02)
 (ii) State which ions are attracted to electrodes A and B. (02)
 (iii) Name the anode and the cathode out of A and B. (01)
 (iv) Oxidation half reaction taking place near Anode is as follows.
 $4\text{OH}(\text{aq}) \longrightarrow 2\text{H}_2\text{O}(\text{l}) + \text{O}_2(\text{g}) + 4\text{e}$
 (a) Write down the reduction half reaction taking place near cathode. (02)
 (b) State a simple activity to identify O_2 gas in the laboratory. (01)

(B) To study the effect of other metals on rusting (bimetallic effect), a mixture of potassium ferricyanide, phenolphthalein, sodium chloride, agar and water is filled in two other places of the spot plate and two iron and zinc rods are connected to its as shown in the figure.

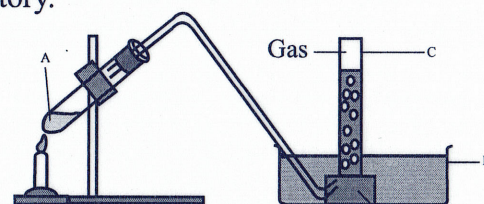
- (i) Write down the color changes that occur near P and Q separately. (02)



- (ii) If Zn is used instead of Cu, What will be the color change near Fe rod? (01)

(C) Below is a setup for preparing oxygen gas in the laboratory.

- (i) Name the parts A, B, C and D. (02)
 (ii) What is the name given to the way in which the produced oxygen gas is collected in the gas jar? (01)
 (iii) Apart from the method you mentioned in (ii) above, Write the names of the ways in which the gases can be used to collect hydrogen and carbon and carbon dioxide? (02)
 (iv) The incomplete equation for the chemical reaction that occurs during heating of the compound is given below.

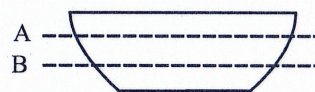


- $\longrightarrow \text{K}_2\text{MnO}_4 + \text{MnO}_2 + \text{.....}$
 (a) Fill in the blanks and rewrite the balanced chemical equation. (02)
 (b) Which type of reaction does the above equation belong to according to the way the reaction takes place? (02)
 (c) Name another chemical compound that can be used in the laboratory to produce oxygen. (01)

(20 marks)

7. (A) The figure shows a boat of 200N. It sinks to A in brackish water and to B in marine water.

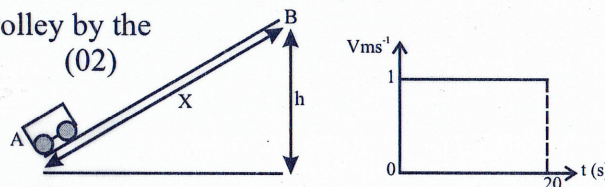
- (i) What is the law explained that can make the boat float in the water? (01)
 (ii) What is the upthrust exerted by the water on the boat in the following instances?
 (a) When the boat is in brackish water (01)
 (b) When the boat is in marine water (01)



- (iii) If the boat taken into fresh water, the boat sinks. What is the reason for this? (02)

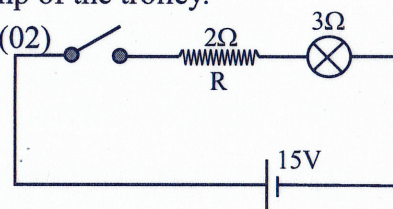
(B) The figure shows a 15V electric powered trolley used to carry goods to a higher position. The mass of the trolley is 18 kg. The motion from A to B is shown in the velocity-time graph. ($g = 10 \text{ m s}^{-2}$)

- (i) Show the motion of this trolley from A to B on a displacement time graph. (02)
 (ii) Calculate the distance X traveled by the trolley by the help of given velocity-time graph. (02)



- (iii) After the trolley moves to position B, the potential energy stored in the trolley was 900J. What is the vertical height (h) that trolley has traveled? (02)
- (iv) If there is no energy loss when the motor of the trolley is operating,
- (a) What is the power of the motor? (02)
- (b) What is the current drawn by the motor when the trolley is moving? (02)
- (v) Below is the designed circuit diagram for the electric lamp of the trolley.

- (a) What is the purpose of applying resistance R here? (02)
- (b) What is the current flowing through this circuit? (02)
- (c) If another identical resistor is added to the circuit in addition to the resistor R to increase the brightness of the bulb, Draw the circuit diagram showing the resistor applied. (01)



8. (A). In Mendel's experiment on inheritance, the following table shows the results of a monohybrid cross for the nature of the seeds of the garden pea is inherited.

Characteristic	Cross	F1 generation	F2 generation
Nature of the seed	Round × Wrinkled	All seeds were round	Round : wrinkle 962:321 3:1

- (i) According to the given information, Mention the dominant and the recessive feature of above monohybrid cross. (01)
- (ii) Explain the information of F2 generation by crossing round and wrinkled seeds, using a diagram (use a suitable letter) (02)
- (iii). Name a genetic disorder due to sex-linked inheritance. (01)
- (iv) What is the most important thing that should be considered to prevent Thalassemia from being inherited? (01)

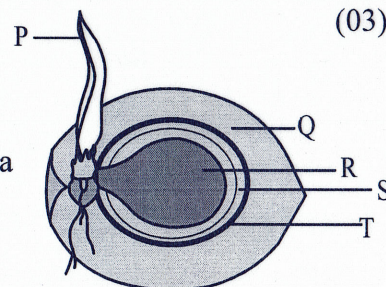
- (B). The image shows a half of coconut that has started germination.

- (i). Identify the following tissues in the figure given below and write the letters related to them. (03)

- (a) Parenchyma tissues
- (b) Sclerenchyma tissues
- (c) Apical meristems

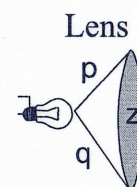
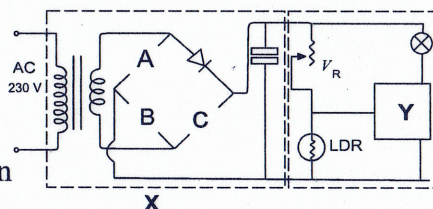
- (ii) State the information about parenchyma and sclerenchyma tissues comparatively. (2mark)

- (a) Living / non - living
- (b) thickness of cell walls



- (C) The figure shows the circuit diagram of a device arranged to turn on a bulb automatically in the house when the dark falls. The circuit is powered by 6V AC power supply.

- (i) The alternating current must be converted in to a direct current in order to operate the circuit. Copy down the diode bridge and draw it to show the correct connection of diodes A, B and C.

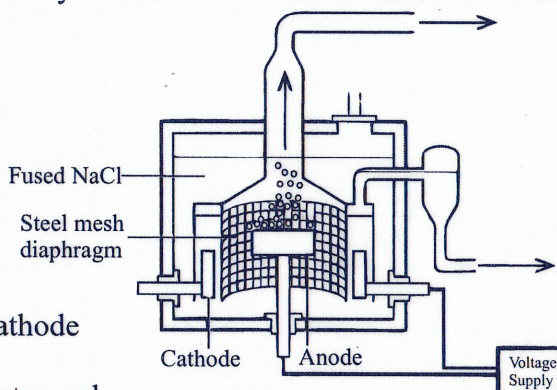


- (ii) What is the function of the capacitor in the circuit? (01)
- (iii) Draw the standard symbol of the electronic component that must be included in the Y, to light up the bulb in the dark. (01)
- (iv) What is the change in resistance of LDR in dark? (01)

- (v) Draw the waveforms of the current, flowing through the circuit before and after the capacitor separately by graphical representation. (02)
- (vi) A parallel beam of light should be obtained from the bulb. Z convex lens with 5 cm focal length, is used to adjust the light beam as required.
- (a) How far should this lens be placed from the bulb? (01)
- (b) If a reflector is to be used instead of this lens, specify what type of mirror would be most suitable. (01)

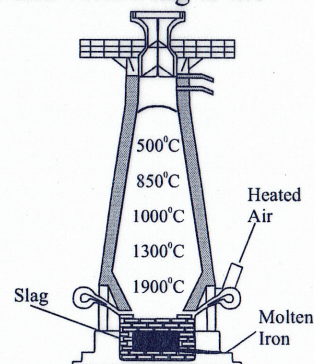
9.(A) Following is the cross-section of the special electrolytic cell which can be used to extract sodium metal industrially.

- (i) What is the name of above cell? (01)
- (ii) Fused sodium chloride is used for that and its melting point is 840°C .
- (a) What is the method that used to reduce that high temperature to 600°C ? (01)
- (b) Mention the things that can be extracted by anode and cathode separately. (02)
- (iii) What is the reason for separating anode and cathode by the Steel mesh diaphragm? (01)
- (iv) There is a rapid reaction of Na with normal water and dilute acids. Among the metals Mg, Al, Fe, Cu, Ag, Select and write the metals which reacts with dilute acids. (01)



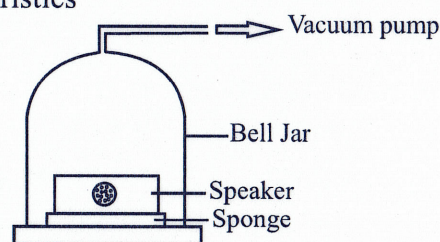
(B) Raw materials which taken from earth crust are used to extract iron and following is the structure of blast furnace which used for that purpose.

- (i) Name three materials that add in to the blast furnace. (02)
- (ii) Following is the balanced chemical equation of main reaction occurred in this process.
- $$\text{Fe}_2\text{O}_3 + 3\text{CO} \longrightarrow 2\text{Fe} + 3\text{CO}_2$$
- (iii) Calculate the mass of hematite that should be reacted to obtain 112kg of iron? (02)
- (Fe - 56, O - 16, C- 12)



(C) A diagram is shown in the figure to identify the characteristics of sound waves. The loudspeaker is turned on and the vacuum pump removes the air in the chamber.

- (i) What is the observed change in sound, after the vacuum pump is turned on?. (1mark)
- (ii) The above observations led to the conclusion that sound is a mechanical wave. Do you agree with above conclusion? Explain with reasons. (2mark)



(D) Using a 1000W immersion heater, it took 42s to raise 500g of water in a vessel from 30°C . Assume that there is no heat loss.

- (i) Find the amount of heat which released by heater. (02)
- (ii) What is the final temperature of water if all the heat released by heater is absorbed by water. (specific heat capacity of water = $4200\text{J kg}^{-1}\text{C}^{-1}$) (03)
- (iii) What is the main heat transferring method when heating water? (01)
- (iv) Why should a three-pin plug be used when connecting the immersion heater to the domestic grid? (01)

* * *

Science Answer Script (34) **Grade 11**

Part I

1 - 4	11 - 1	21 - 2	31 - 4
2 - 3	12 - 4	22 - 1	32 - 4
3 - 3	13 - 4	23 - 3	33 - 4
4 - 2	14 - 4	24 - 2	34 - 1
5 - 1	15 - 3	25 - 3	35 - 3
6 - 2	16 - 3	26 - 2	36 - 3
7 - 1	17 - 4	27 - 1	37 - 2
8 - 1	18 - 2	28 - 2	38 - 4
9 - 2	19 - 3	29 - 2	39 - 1
10 - 1	20 - 1	30 - 3	40 - 3

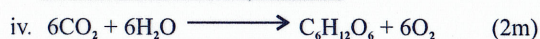
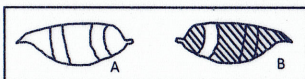
Part A - Structured Essay

01. A. i. Trout fish (2m)
 ii. B tank B (1m)
 iii. Chena (1m)
 iv. Paddy field (1m)
 v. forest (1m)
 vi. a. Bisokotuwa (1m)
 b. Eutrophication (1m)
 c. Chronic kidney disease (1m)
 vii. a. Loss of habitats (1m)
 b. creation of special areas for elephant crossing points/ Ecological corridors/ for a creating large parks exclusively for elephants/ suitable answer (1m)

- B. I. 18th Hour
 ii. Coral (1m)
 iii. No electricity generation at night (1m)
 iv. Wind/sun (1m)

(15mark)

02. A. I. /KOH/ Potassium Hydroxide (1m)
 ii. Preventing light entering in to the leaf (1m)
 iii. (1m)



- B. i. Amphibia (1m)
 ii. a) Turtle, Sea gull, Dolphin (1m)
 b) Sea horse (1m)
 iii.

information	Dolphin	Turtle	Sea Gull	Sea horse	
phylum	Mammalia	Reptelia		Pisces	01
chambers in heart	4		4	2	01
Respiratory organ	Lungs	Lungs		gills	01
Worm blooded/ cold blooded	Worm blooded	Cold blooded	Worm blooded		01

- iv. a) Jelly fish (2m)
 b) Star fish (2m)

03. A. i. Battery water (1m)
 ii. Battery Acid (1m)
 iii. Grease (1m)
 iv. Chlorine (1m)
 v. Chlorine powder/battery water, cotic soda/ battery water (1m)
 vi. Cotic soda (1m)

- B. I. a) Li, Na, K, Al, Mg, Ca (1m)
 b) H, C (1m)

- c) B, Al (1m)
 ii. K/potassium (1m)
 iii. K, Na, Ca/Na, Ca, Mg/Ca, Mg, Al (1m)
 iv. a) K/Na/Ca/Mg/Al (1m)
 b) Zn/Fe/Sn/Pb/Cu (1m)
 c) Cu/Hg?Ag/Pt/Au (1m)
 v. For drawing with correct symbols (1m)

04. A. I. Newtons first law (1m)
 ii. a) Static frictional force (1m)
 b) Limiting frictional force (1m)
 c) Dynamic frictional force (1m)
 iii. a) O (1m)
 b) Velocity of the car increases (1m)
 Velocity of the log decreases (1m)
 iv. a) Yes (1m)
 b) $F = t_1 + t_2$ (1m)
 c) 250N (1m)
- B. I. B (1m)
 ii. Moment of force =
 force x perpendicular distance to rotational axis (1m)
 = $100\text{N} \times 0.25\text{m}$ (1m)
 = 25Nm (01) No units, No marks (1m)
 iii. An idea such as connecting an iron tube to the B end of the device (also give marks for applying a chemical to loosen the nail. (1m)

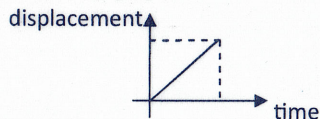
05. A. I. A - complete cardiac diastole
 B - Arterial contraction
 C - Ventricular contraction (2m)
 ii. a) B (1m)
 b) C (1m)
 c) C (1m)
- B. I. Nucleic acids (1m)
 ii. Proteins (1m)
 iii. Ribosome (1m)
 iv. Sodium hydroxide and copper sulphate (1m)
 v. carbon, Hydrogen, oxygen (1m)
 vi. A - Controlling all cellular activities (3m)
 B - Secretion / packing storing and transporting of secretions
 C - Generation of energy by cellular respiration/ cellular respiration/ acting as power houses

06. A. I. $\text{H}^+(\text{aq}), \text{OH}^-(\text{aq}), \text{SO}_4^{2-}(\text{aq})$ (physical states are not essential) (2m)
 ii. A near the electrode A - $\text{OH}^-(\text{aq}), \text{SO}_4^{2-}(\text{aq})$ (2m)
 B Near the electrode B - $\text{H}^+(\text{aq})$
 iii. A - Anode (1m)
 B - Cathode
 iv. a) $2\text{H}^+(\text{aq}) + 2\text{e}^- \rightarrow \text{H}_2(\text{g})$ (2m)
 b) When inserting a glowing splinter, it reignites/ inserting glowing splinter. (1m)

- B. I. Near P - Pink (2m)
 Near Q - Blue (2m)
 ii. Turning in to pink (1m)

- C. I. A - condos/ KMnO_4 B - Through, C - Gas jar (2m)
 D - Beehive shelf
 ii. a) Downward Displacement of water (1m)
 b) Hydrogen - downward displacement of air (2m)
 Carbon dioxide - Upward displacement of air (2m)
 iii. a) $2\text{KMnO}_4 \rightarrow \text{K}_2\text{MnO}_4 + \text{MnO}_2 + \text{O}_2$ (2m)
 b) Chemical decomposition reactions (1m)

07. A. I. c) NaNO_3 , KClO_3 , KNO_3 , H_2O_2 (1m)
 For labeling the area of the rectangle (2m)
 For correct graph



- ii. Calculating the area of the rectangle
 $1\text{ms}^{-1} \times 20\text{s}$
 $= 20\text{m}$
 iii. $E_p = mgh$
 $900\text{J} = 18\text{kg} \times 10\text{ms}^{-1} \times h$
 $900/180 = h$
 45w
 iv. a) Power = work done/time
 $= 900\text{J} = 18\text{kg} \times 10\text{ms}^{-1} \times h$
 $= 45\text{ w}$
 b) $P = VI$
 $45\text{ w} = 15\text{v} \times I$
 $I = 45/15$
 $= 3\text{A}$
 v. a) Preventing burnout of bulb/ reducing current flowing
 b) $V = IR$
 $15\text{v} = 1 \times 5$
 $I = 3\text{A}$

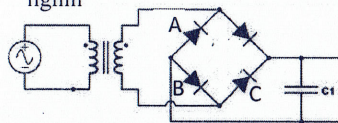
- c) Connecting R resistor parallel to 2 resistor
 B. I. Archimedes principle / Law (1m)
 ii. a) 200N (1m)
 b) 200N (1m)
 iii. The density of fresh water is lower than the density of brackish and marine water (1m)
 (20m)

08. i. Dominate feature- Round seeds, recessive feature - elongated seeds (1m)
 ii. (2m)

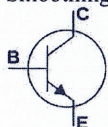
	R	r
R	RR	Rr
r	Rr	rr

- iii. Haemophilia, Red- green colour blindness (1m)
 iv. Heterozygosity/ marriage between thalassemia carriers (1m)
 B. i. a) S/R (1m)
 b) T (1m)
 c) P (1m)
 ii. a) Parenchyma - Living, Sclerenchyma - non lignin (2m)

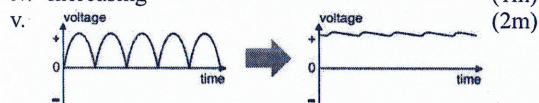
- C. I. (2m)



- ii. Smoothing (1m)
 iii. (1m)



- iv. Increasing (1m)



- vi. a) 5cm (1m)
 b) concave mirrors (1m)

09. A. I. Down's cell (1m)
 ii. a) Adding 40% fused CaCl_2 40% (1m)
 b) At the anode - Chlorine gas Cl_2 (2m)
 iii. Preventing the reaction in between sodium and chlorine back (1m)
 iv. Cu and Ag (2m)
 B. I. Coke, Hematite and Limestone (3m)
 ii. $\text{Fe}^{2+} : \text{Fe}^{3+}$ (2m)
 $= 160\text{kg}$
 C. I. Fading out of the sound gradually / Sound will not coming out (1m)
 ii. Yes. Particular medium is needed for propagation of mechanical waves. (1m)
 D. I. $E = pt$ (2m)
 $= 1000\text{w} \times 42$
 $= 42\ 000\text{J}$
 ii. $Q = mc\theta$ (2m)
 $42\ 000 = 0.5\text{kg} \times 42\ 000\text{J/kg} \cdot ^\circ\text{C} \times \theta$
 $0 = 42\ 000 / 21\ 00$
 $= 20$
 $30 + 20 = 50^\circ\text{C}$
 iii. Convection (1m)
 iv. As the three - prong plug connected to the ground wire, the immersion heater protects against electric shock due to electrical leakage (2m)