

බස්නාහිර පළාත් අධ්‍යාපන දෙපාර්තමේන්තුව மேல் மாகாணக் கல்வித் திணைக்களம் Department of Education - Western Province			
වර්ෂ අවසාන ඇගයීම ஆண்டிறுதி மதிப்பீடு - 2016 Year End Evaluation			
ශ්‍රේණිය } II தரம் } Grade	විෂය } பாடம் } Science Subject	පත්‍ර } I வினாத்தாள் } Paper	කාලය } 01 hour காலம் } Time

Note:

- Answer all questions
- In each of the question 1 to 40, pick one of the alternatives (1), (2), (3), (4) which you consider is correct or most appropriate.
- Mark a (X) cross on the number corresponding to your choice in the answer sheet provided.

(01) The first scientist who introduced the electro magnetic induction to the world is,

- | | |
|--------------------|---------------------|
| (1) Einestein | (2) Michel Fharaday |
| (3) J. J. Thompson | (4) Ohm |

(02) Some statements about viruses are given below.

- A - Can be observed only through the electron microscope.
 B - According to the location it exhibits the characteristics of living or non living.
 C - Some metabolic reactions occur within the virus.

Of the statements given above the true statements are,

- | | |
|------------------|-------------------|
| (1) A and B only | (2) A and C only |
| (3) B and C only | (3) A, B and Call |

(03) Electronic configuration of an atom is 2, 8, 8, 2. The element must be

- | | | | |
|---------------------------|---------------------------|---------------------|---------------------------|
| (1) $^{20}_{10}\text{Ne}$ | (2) $^{40}_{20}\text{Ca}$ | (3) ^4_2He | (4) $^{36}_{18}\text{Ar}$ |
|---------------------------|---------------------------|---------------------|---------------------------|

(04) A certain fruit shows the characteristics given below.

- Pericarp is fibrous.
- Has air filled shells.
- Seed coat is thick.

What is the dispersal method of the above mentioned fruit?

- | | |
|----------------------------|--------------|
| (1) by animal | (2) by water |
| (3) by explosive mechanism | (4) by wind |

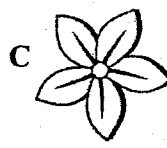
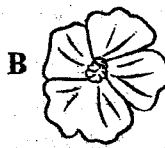
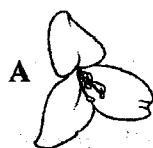
(05) Which one of the following shows the Lewis structure of methane

- | | | | |
|-------------------|---|---|---|
| (1) CH_4 | (2) $\begin{array}{c} \text{H} \\ \times \\ \times \\ \text{H} \times \text{C} \times \text{H} \\ \times \\ \text{H} \end{array}$ | (3) $\begin{array}{c} \text{H} \\ \cdot \\ \cdot \\ \text{H} : \text{C} : \text{H} \\ \cdot \\ \cdot \\ \text{H} \end{array}$ | (4) $\begin{array}{c} \text{H} \\ \\ \text{H} - \text{C} - \text{H} \\ \\ \text{H} \end{array}$ |
|-------------------|---|---|---|

- (13) Select the **incorrect** statement regarding the animal cell and the plant cell.

	Animal Cell	Plant cell
(1)	Chloroplast are absent.	Chloroplast are present.
(2)	Cytoplasm has taken more space.	Cytoplasm has been pushed to periphery of the cell.
(3)	Some time large vacuoles are present.	A large central vacuole or many small vacuoles present.
(4)	Cell wall is absent.	Cell wall is present.

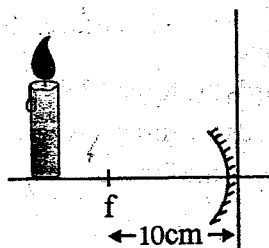
- (14) Given below are few characteristics of a flower found by a student when participating in a field trip.



Select the correct statement regarding the flowers.

- (1) A is a monocot flower (2) A and B both are monocot flowers
 (3) A is a dicot flower (4) A and C both are monocot flowers
- (15) What is the number of CO_2 molecules in 88g of CO_2 .
- (1) $6.022 \times 10^{23} \times 88$ (2) $88 \times 44 \times 6.022 \times 10^{23}$
 (3) $6.022 \times 10^{23} \times \frac{88}{44}$ (4) $6.022 \times 10^{23} \times 44$
- (16) Which of the following shows the inhibitor, that reduces the rate of reaction
- (1) A few drops of sulphuric acid is used to dissociate hydrogen peroxide.
 (2) A few to drops of manganese dioxide is used is dissociate hydrogen peroxide.
 (3) Nickel is used in manufacturing margarine by hydrogenation of unsaturated fats.
 (4) Porous iron is used in habour process of manufacturing ammonnia.
- (17) A characteristic of X - rays
- (1) Need a medium to travel and travels with the velocity of light
 (2) Do not need a medium to travel and travel s with the velocity of light.
 (3) Need a medium to travel and do not travel with the velocity of light.
 (4) Do not need a medium to travel and do not travel with the velocity of light.

- (18)

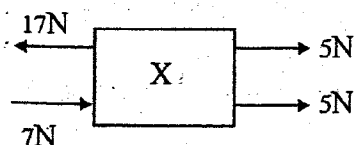


The diagram, shows a candle 15cm away from the concave mirror. Select the characteristics of the image formed.

- (1) real, upright
 (2) virtual, upright
 (3) real, upside down
 (4) virtual, upside down

- (19) Select a respiratory disorder due to the destruction of cilia and collection of mucus and dirt particles in the respiratory tract,
- (1) Common cold
 - (2) bronchitis
 - (3) Silicosis
 - (4) Pneumonia
- (20) Out of the following which one shows the detailed explanation of a person's blood pressure which is 120/80 mmHg.
- (1) Systolic blood pressure is 120mmHg and diastolic pressure is 80mmHg
 - (2) Systolic blood pressure is 80mmHg and diastolic pressure is 120mmHg
 - (3) diastolic blood pressure is 120mmHg or 80mmHg
 - (4) diastolic blood pressure is in between 80mmHg and 120mmHg
- (21) Select a polymer with cross links.
- (1) Polythene
 - (2) Polystyrene
 - (3) Vulcanized rubber
 - (4) starch
- (22) Out of the following statements which statement is correct regarding the enzyme.
- (1) There are enzymes without any protein components
 - (2) The activity of enzyme is to catalyze the bio - chemical reactions
 - (3) Enzymes are useful in making structural components
 - (4) Enzymes do not activate if the temperature is less than the body temperature
- (23) A solution of volume 250cm^3 was made by adding 25cm^3 of pure acetic acid. What is the volume fraction of acetic acid in this solution?
- (1) 0.1
 - (2) 0.5
 - (3) 10
 - (4) 25
- (24) The equation which shows the motion of a moving object. (m = mass, V = velocity)
- (1) mv^2
 - (2) $\frac{mv^2}{2}$
 - (3) $\frac{m}{v^2}$
 - (4) $\frac{v^2}{m}$
- (25) A conductor placed perpendicular to a magnetic field moves when a current flows through it. Which law indicates the direction of the motion of the conductor.
- (1) Ohm's Law
 - (2) Flemings right hand Law
 - (3) Fleming left hand Law
 - (4) Maxwell's corkscrew rule

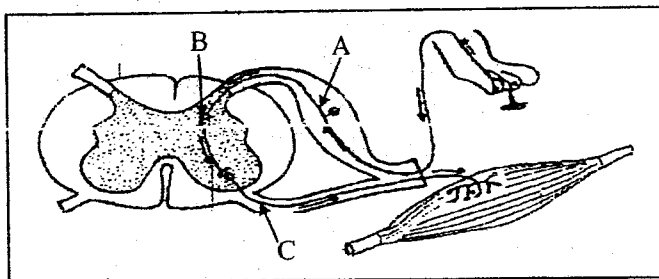
(26)



The diagram shows how the forces are acting on an object which is kept on a smooth surface. Select the correct statement.

- (1) Object X does not move.
- (2) Object X moves towards the force 17N
- (3) Object X moves towards the force 7N
- (4) Object X moves towards the force 5N

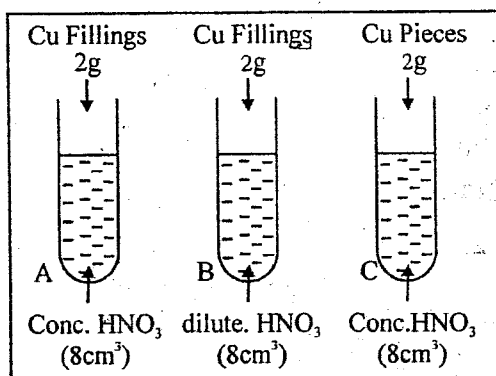
(27)



Study the above reflex arch and select the correct answer.

- (1) A - Sensory neuron, B - Motor neuron, C - Intermediate neuron
- (2) A - Sensory neuron, B - Intermediate neuron, C - Motor neuron
- (3) A - Motor neuron, B - Intermediate neuron, C - Sensory neuron
- (4) A - Intermediate neuron, B - Sensory neuron, C - Motor neuron

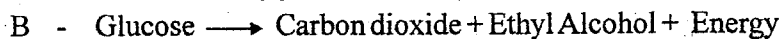
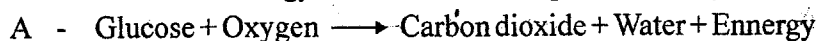
(28)



Out of the following which one shows the descending order of the rate of reaction

- (1) A, B, C
- (2) C, B, A
- (3) B, C, A
- (4) A, C, B

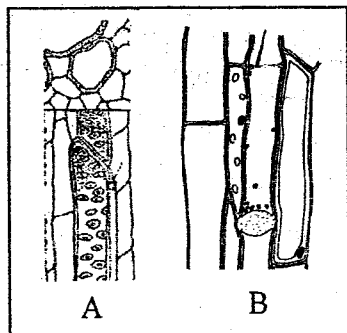
(29) Given below are 2 energy reactions that takes place in an organism.



Select the correct statement.

- (1) A shows the anerobic respiration and energy production is high.
- (2) B shows the arobic respiration and energy production is less.
- (3) A shows the metabolic process of oxidation of simple food and energy production is high
- (4) Process B shows the complete break down of glucose molecules where process A shows incomplete break down of glucose molecules.

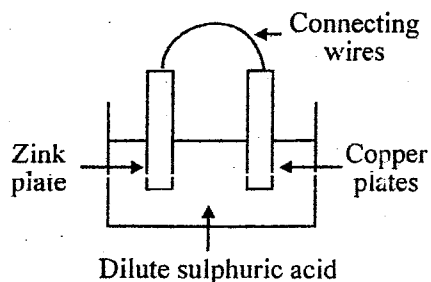
(30)



Out of the following select the plant tissue and its function using the above diagrams.

- (1) A - Xylem tissue - translocation of food
- (2) B - Phloem tissue - provides rigidity
- (3) B - Xylem tissue - translocation of food
- (4) A - Xylem tissue - provides rigidity

(31)



- A - Oxidation takes place at the zink plate Zn acts as the anode.
 B - Reduction occurs at the copper plate Cu acts as the cathode.
 C - Standard current flows through the connecting wire from Zink to copper

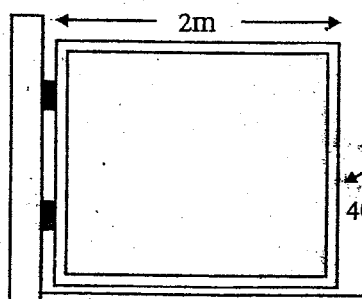
Out of the statements A, B and C which one is correct regarding the simple cell.

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

(32) What is the compound in which the octate of the electrons is incomplete?

- (1) CCl_4 (2) CO_2 (3) AlCl_3 (4) N_2

(33)



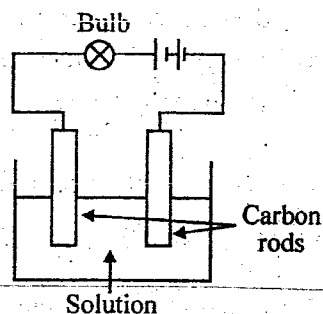
The figure shows a gate with mass of 250N. What is the moment of it if 40N force is exerted on it by pushing?

- (1) 500Nm
 (2) 80Nm
 (3) 290Nm
 (4) 130Nm

(34) What is the current flowing through 1000W immersion heater if it is supplies 230V?

- (1) $100 \times 230\text{A}$ (2) $\frac{230}{1000}\text{A}$
 (3) $1000 + 230\text{A}$ (4) $\frac{1000}{230}\text{A}$

(35)



According to the experiment given above select the correct answer from the table given below.

Solution	Whether the bulb illuminates or not	nature of the bonds of the solution
(1) Distilled water	illuminate	co - valent bond
(2) Salt solution	illuminate	ionic bonds
(3) Sugar solution	do not illuminate	ionic bonds
(4) Ethyl Alcohol	illuminate	co - valent bonds

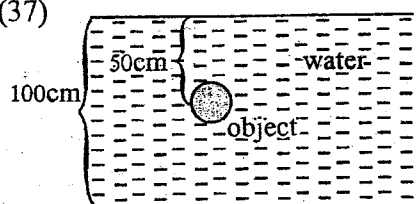
- (36) Given below is a result of explanations of patterns of inheritance using probability symbols for colours of beads. R = red W = white

	RR	RW	WR	WW
1st Group				
2st Group				

of the data given in the table above what is the genotypic ratio of F_2 generation according to the Mendal's monohybrid cross?

- (1) 1:1:1 (2) 2:1:2 (3) 1:2:2 (4) 1:2:1

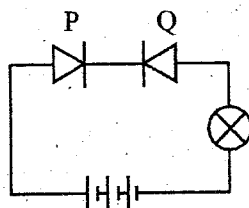
(37)



What is the water pressure exerted on the object in the diagram? Density of water (1000Kg m^{-3} , $G = 10\text{ms}^{-2}$)

- (1) 15000 Pa
(2) 10000 Pa
(3) 150 Pa
(4) 5000 Pa

(38)



Select the correct statement regarding the above circuit.

- A - The bulb does not light
B - The bulb light
C - When changing terminals of Q the bulb starts to light

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

- (39) In which statement shows the diseases eradicated in Sri Lanka according to WHO (World Health Organization) report.

- (1) malaria, filaria, polio
(2) dengue, chickengunya, tuberculosis
(3) malaria, tuberculosis, chikengunya
(4) filaria, rat fever, polio

- (40) Out of the following which one is not expected in sustainable development and environmental management?

- (1) Use of multi crop cultivation instead of mono crop cultivation.
(2) Use of agro chemicals for biological pest control
(3) Reforestation due to equilibrium of environment
(4) Encouraging the use of organic fertilizer

බස්නාහිර පළාත් අධ්‍යාපන දෙපාර්තමේන්තුව மேல் மாகாணக் கல்வித் திணைக்களம் Department of Education - Western Province			
වසර අවසාන ඇගයීම ஆண்டிறுதி மதிப்பீடு - 2016 Year End Evaluation			
පන්තිය / தரம் / Grade	11	විෂය / மூலம் / Subject	Science
පත්‍ර / வினாத்தாள் / Paper	I	කාලය / காலம் / Time	03 hours

Name

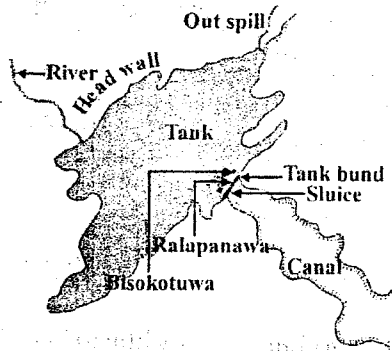
Index No.

Important:

Answer all questions of part "A" in the given space. Answer three questions of part "B" Submit answer papers for parts "A" and "B" together.

Part A - structured essay

- (01) (A) Sri Lankan irrigation system is one of the unique water management systems. Historical large tanks in our country is identified as a great technical attempt. Given below is a picture of the main parts of a tank



- (i) What is the reason behind constructing tanks within the dry zone?

- (ii) Write the main function of the part of a tank given below.

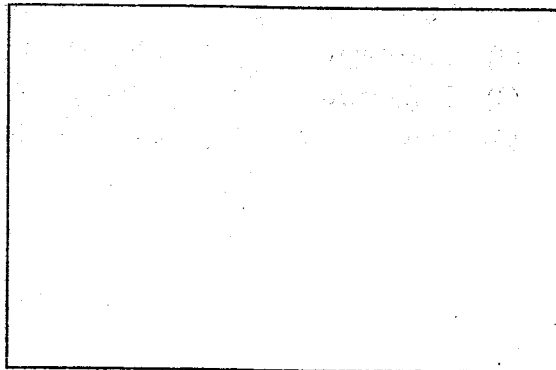
(a) Bisokotuwa -

- (b) Ralapanawa -
- (c) Tank bund -

- (iii) A food chain function in the tank area is given below complete the food chain by using suitable organisms.

aquatic plants → tad poles → →

- (iv) Draw a rough diagram suitable to illustrate quantitatively the organisms in the tertiary level of a tank.



- (B) (i) Tank is an example for an eco system. In relation to the tank define the term 'eco system'.

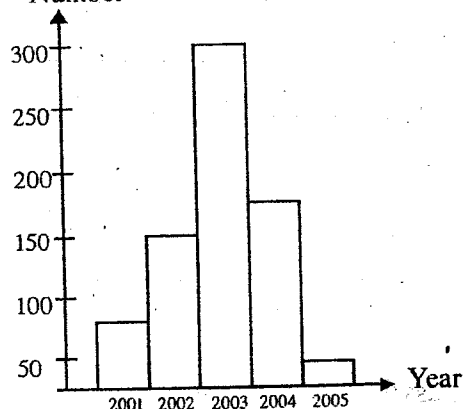
.....
.....

- (ii) It was noticed that a large amount of algae were growing on the tank due to the effluent released to the tank by a close by factory.

(a) What is the name given to this condition?

(b) Name two ions collected in the water as a result of the above mentioned condition.
.....

(C) Number



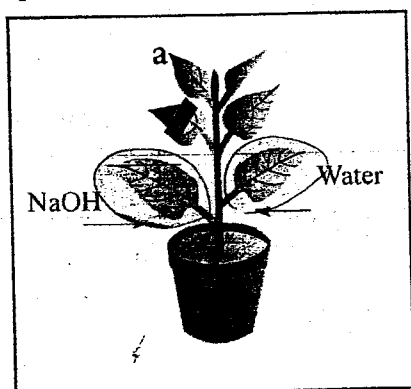
The graph shows the number of rabbits living in the natural reserve in Wewa Ismatta.

Answer the questions according to it.

- (i) What is the period that shows a high growth rate of rabbits?
.....

- (ii) Write 2 reasons for the change in the number of rabbits in year 2005.
.....

- (02) (A) Given below is an apparatus prepared to show the factors needed for photosynthesis.



- (i) What is the factor needed for photosynthesis tested by the leaf 'a'?
.....

- (ii) Name the organelle that does photosynthesis in a plant cell.
.....

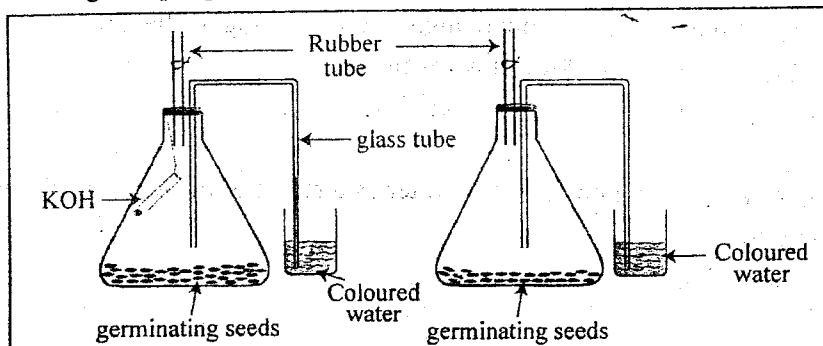
(iii) What compound is produced here?

(iv) What is the tissue in the human body that transports the gas which is absorbed by NaOH?

- (v) After some time it was noticed that the tissues and tips of the leaves had died
identify the relevant mineral for the above mentioned deficiency.

.....
.....

- (B) The following set up is prepared to show the absorption of O_2 in respiration.



- (i) Of the set ups 'A' and 'B' Identify the Experimental set up and control set up

- Experimental set up -
- Control set up -

- (ii) What is the function of KOH?

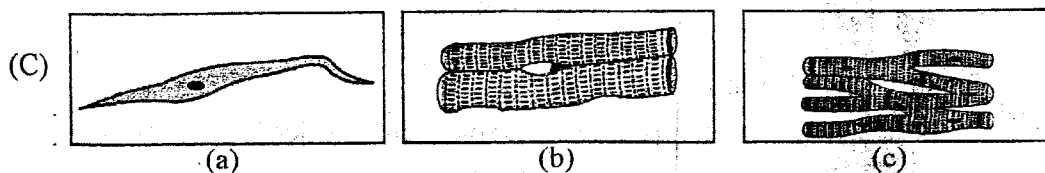
.....

- (iii) Why does the coloured water travel up the glass tube?

.....

- (iv) In germinating seeds what will happen to the seed in development other than the growth of cells.

.....



- (i) Given above are animal tissues. Write the correct letter that depicts cardiac muscle tissue and tissues in the wall of blood capillaries.

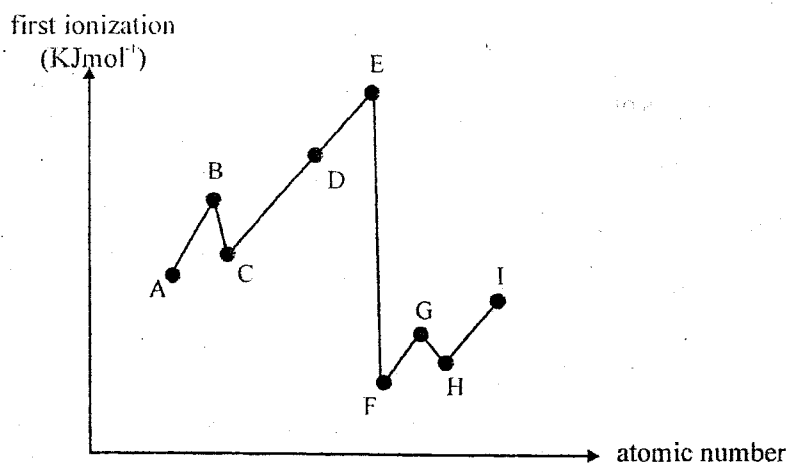
- Heart -
- Wall of blood capillaries -

(ii) Of the above tissues which tissue does not become fatigue quickly and is controlled involuntarily?

.....

(iii) Name the tissue with a spindle shape

(03) (A) The graph illustrates variations of the first ionization energy of few elements belonging to the second and third periods respectively and they are not real symbols for elements.



(i) Place the elements A - J in the periodic table given below.

(ii) Define the term the "First Ionization Energy".

.....

.....

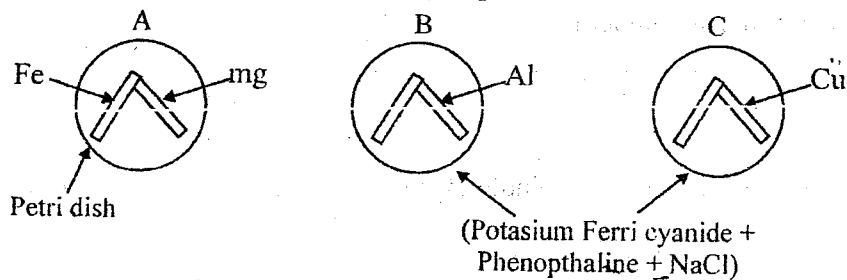
(iii) The first Ionization energy of A is higher than J explain the reason.

.....

.....

.....

(B) Following experimental setups represent corrosion of iron.

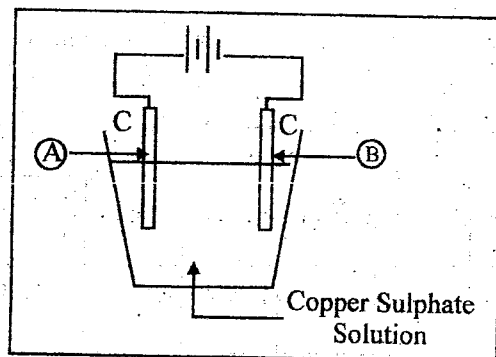


(i) After some time which set - up shows the blue colour around the iron nail.

(ii) Which set ups protect iron by making it as the cathodic protection?

(iii) Write the balanced equation when magnesium is heated in the air.

(C) The diagram shows the electrolysis of CuSO_4 solution using carbon electrodes in the laboratory.

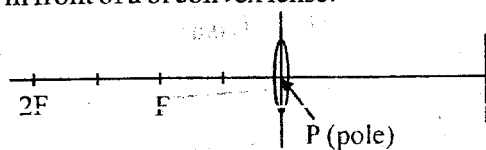


(i) Which letter shows the cathode of this setup?

(ii) Write the reaction that takes place at the cathode.

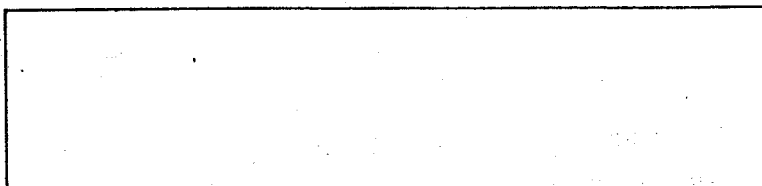
(iii) Write the observations in this electrolysis process.

- (04) (A) The figure shows the setup which is used to observe an image formed when a lighted candle is kept in front of a bi convex lens. (3)



- (i) Can the image be formed on the screen or not when the lighted candle is moved from F (focus) towards P (pole)?

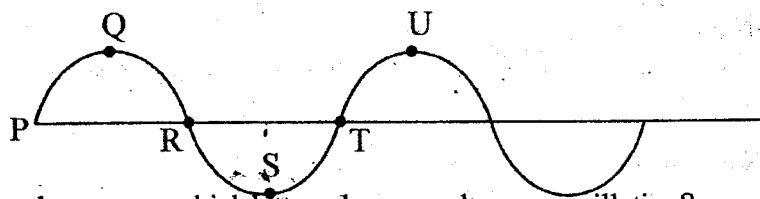
- (ii) Sketch the ray diagram to show how the image is formed by the lens when the candle is kept in between F and P.



- (iii) Write 2 characteristics of the image formed in the above ray diagram.

- (iv) Name a device which was designed relevant to the above situation.

- (B) Given below is a graphic representation of a longitudinal wave.



- (i) In the above wave which letters show a cycle or an oscillation?

- (ii) Mention how the particles move in the above wave motion.

- (iii) Explain the term "Wave length" in a wave.

- (C) Musical instruments can be classified according to the way it generates sound.

- (i) Classify the musical instruments and write an example for each.

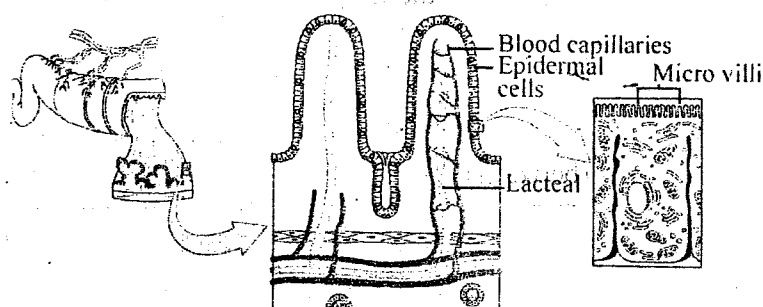
- (ii) Explain the reason why a drum generates loud sound when tapping strong and a sound when tapping slowly.

208

Paper II
Part B - Essay

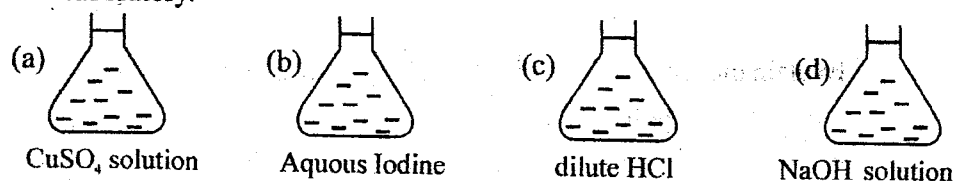
- Answer three questions only.

(05) (A) The diagram below shows an internal section of a human digestive system.



- (i) State 2 characteristics of this structure which is adapted to increase its efficiency of absorption.
 - (ii) Which part of this structure absorbs the end product of protein digestion?
 - (iii) Write 2 adaptations of the respiratory surfaces for efficient gas exchange.
 - (iv) Write the balance chemical equation for respiration.
 - (v) When the selective reabsorption takes place in the excretory system, name 2 substances which is absorbed again in to the blood capillaries?
 - (vi) Name a heavy metal that has been identified to be contributing to CKD.
- (B)
- (i) Name two organisms who belong to domain bacteria.
 - (ii) Name the organism that contributes to form lichens with fungi.
 - (iii) State two Homoiothermic groups of animals.
 - (iv) Write 2 advantages of grafting and budding.
 - (v) In which part of the female reproductive system, does fertilization takes place?
 - (vi) Mention 2 genetic disorders due to sex linked inheritance.

(06) (A) Given below are four conical flasks with 250cm³ solutions prepared in the laboratory.



- (i) Write 2 physical characteristics of above solutions which show that they are homogenous mixtures.

(ii) 0.5mol dm^{-3} NaOH solution is contained in 250cm^3 of conical flask. Calculate the mass of NaOH needed to prepare the above solution.

(Na = 23" O = 16" H = 1)

(iii) Write the steps of preparing 250cm^3 of NaOH solution in the laboratory.

(iv) What is the suitable method of separating Iodine from an aqueous Iodine solution?

(v) Explain the way of separating Iodine from the method mentioned by you in the above question.

(vi) (a) Write the balanced chemical equation for the reaction between HCl and NaOH.

(b) What type of a chemical reaction is it?

(c) This reaction is considered as a neutralization reaction. Explain the reason for this.

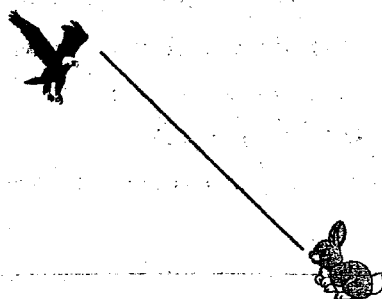
(B) (i) Suggest a substance which should be added to decrease the acidity of the soil.

(ii) When dissolving 20g of urea in 180g of water, the temperature of the solution decreases by 5°C .

(a) What is the heat change that occurred during the reaction. Specific Heat Capacity of water is $4200\text{J C}^{-1}\text{ kg}^{-1}$.

(b) Write 2 assumptions you made there.

(07) (A) The diagram below shows the flight of a hawk who landed instantly after seeing a rabbit. It took the prey and flew back to the sky.



(i) Calculate the potential energy of the hawk, when it is 150m above the earth. The mass of the hawk is 1800g.

(ii) The hawk starts its flight instantly from rest. It flew 5 seconds with uniform acceleration of 4.8ms^{-2} and maintained its velocity for 3 seconds until it reached the prey in a linear path.

(a) Find the velocity the hawk within the first 5 seconds.

(b) What is the displacement of the hawk when it flew in acceleration?

(c) Find the total displacement of the hawk during the 8 seconds.

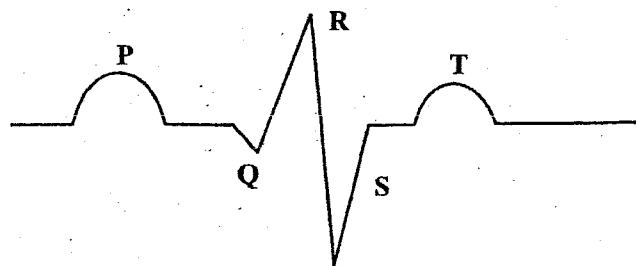
- (d) Draw the velocity time graph to show the flight of the hawk during the 8 seconds.
- (iii) (a) The prey with a mass of 600g fell down to the earth. Draw the velocity time graph to show the movement of the prey falling down to the earth from rest.
- (b) Briefly explain the Newton's law relevant to the above incident.
- (c) Mention the reason, for the prey to stop, after being drawn to a certain distance when it fell from the sky.

- (B) The diagram below shows the mass of a man with 50kg fishing in a boat with a mass of 150kg. Answer the following questions according to the information given above.



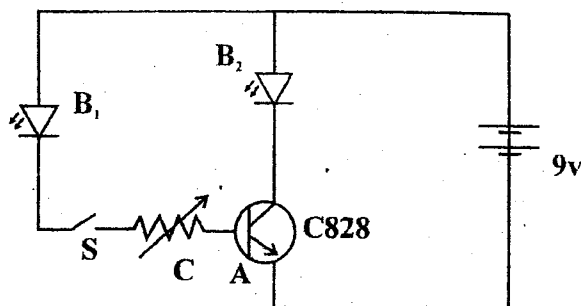
- (i) Draw the forces exerted on the boat when it is floating.
- (ii) Write 2 characteristics of the above mentioned forces.
- (iii) Calculate the displaced volume of water when carrying 300kg of fish by boat.
(density of water is 1000kgm^{-3})

- (08) (A) The figure shows an electro cardio gram of a healthy person.

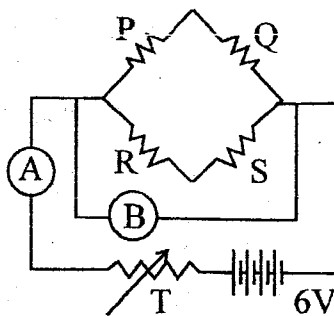


- (i) Mention the letters that show the Atrial contraction and ventricular contraction separately.
- (ii) The endocrine system of the body secretes Adrenalin Hormone. What is the function of the hormone and which gland secretes it?
- (iii) If fertilization does not occur in the female reproductive system which hormone comes down in the blood?

- (B) (i) Name 2 main biological molecules in the lining matter.
(ii) Mention 2 reasons for selecting garden pea plant for mentel's experiments about inheritance.
(iii) What changes will happen to the ova in a garden pea pod after fertilization ?
- (C) The circuit given below demonstrates a certain process of an electronic apparatus.

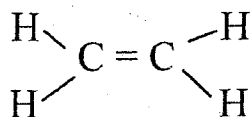


- (i) Name A, B (B_1 , B_2) and C apparatus.
(ii) What is the change that you expect to happen in B_1 and B_2 in the circuit if 'S' switch is closed and both LED s are illuminated?
(iii) What function does the above circuit demonstrate?
(iv) When 's' switch is opened B_2 LED extinguishes. Explain the reason?
- (D) What is shown in the figure is a simple circuit prepared by a group of students to prove the ohm's law

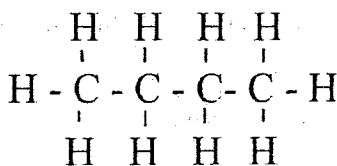


- (i) State what P, Q, R, S are.
(ii) Name the apparatus A.
(iii) Draw a suitable table to indicate readings of A and B apparatus.
(iv) Draw a sketch graph of the readings obtained above.
(v) For what purpose is the accessory T installed in the circuit?
(vi) Find the value for P Q R and S apparatus if a current of 3A is given by 6V cells.

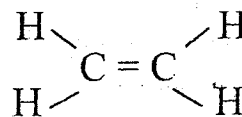
(09) A Given below are structural formula of three organic compounds.



A



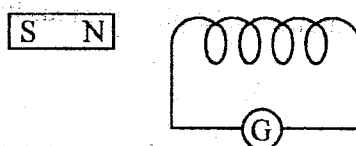
B



C

- (i) Name the hydrocarbon.
- (ii) Group A, B, and C compounds according to the number of bonds between carbon atoms.
- (iii) Find the molar mass of molecule "B"
- (iv) (a) Name the bond types of the above mentioned compounds.
(b) Write a common feature of the above mentioned bond type.
- (v) (a) Name the polymer produced by "C" when polymerization occurs.
(b) Draw the structure of the above mentioned polymer.

(B) The diagram illustrates a model of the set up that can be used to study electro magnetism



- (i) Write an observation when inserting a bar magnet into the coil
 - (ii) Write another method of operating this set up to get the same observation mentioned above.
 - (iii) Briefly explain the reason for the above observation.
- (C) The set up is changed by placing two dry cells instead of the galvanometer and a compass instead of bar magnet.
- (i) Mention an observation made by you just after placing the compass.
 - (ii) Write the reason for the above mentioned observation.
 - (iii) Write 2 methods that can be used to increase the force according to the observation.
- (D) The coil gets heated after connecting the dry cells.
- (i) Write a change that can be done to the setup to get more heat.
 - (ii) Name an alloy instead of copper that can be used to get more heat.
 - (iii) State a property of the you mentioned above alloy which shows that is more suitable.
 - (iv) Name an electric appliance made by using the above method.