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මத்திய மாகாண கல்வித் திணைக்களம்
DEPARTMENT OF EDUCATION - CENTRAL PROVINCE

Grade 11 | **SECOND TERM TEST - 2022** | **34 S I**

Science I | ***One hour***

Note :
* **Answer all questions.**
* **Use the seperate answer sheet to answer the questions.**
* **In each question 1 to 40, pick one of the alternatives (1), (2), (3), (4) which you consider as correct or most appropiate and mark a X on the number corresponding to your choice.**

01. The naturally existing element with most unstable atoms is,
1. Ar 2. Ne 3. Na 4. He

02. The combination ratio of Hydrogen and Oxygen atoms in Carbohydrate is,
1. 1 : 1 2. 1 : 2 3. 2 : 1 4. 3 : 1

03. A group of students who observed the leaves of pea plant during their field visit said that the plants suffer with phosphorous deficiency. What would be a character that is observed by them ?
1. Presence of read or purpule spots.
2. Yellow or brown patches.
3. Chlorosis in mature leaves.
4. Dying of tissues at the tips.

04. Which physical proporty of 23 g of sodium is varied on the moon and the Earth,
1. Number of moles 2. Mass 3. Density 4. Weight

05. An instance where frictional force is not useful,
1. Walking
2. Climbing a tree
3. Running a vehicle
4. Moving the Carom buttons on the carom board.

06. A domain which is not introduced by Carl Woese in 1990 is,
1. Archea 2. Bacteria 3. Eukarya 4. Fungi

07. The diagram shows a way of collecting a sample of Carbondioxide gas. The given method is,

1. Upward displacement of air.
2. Downward displacement of water.
3. Upward displacement of water.
4. Downward displacement of air.

08. The temperature of a sample of water contained in a beaker is 27^0C. The Kenvil value of that temperature is,
1. 300 K 2. 246 K 3. 127 K 4. 27 K

09. Few features of invertebrates are given below,
A - All are aquatic
B - Diploblastic
C - Possess radial symmetry
D - Muscular foot is present
The features present is cnidarians are,
1. A, B and D only 2. B and c only 3. A, B and C only 4. A, B and D only

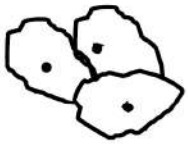
10. Select the choice with a difference between Amphibia and Reptilia.

	Amphibia	Reptilia
1.	Cold blooded	Warm blooded
2.	Live in water	Live on land
3.	Glandular wet skin is present	Dry skin without glands
4.	Four chambers is the heart	Three chambers is the heart

EXAMRESULTS.LK

11. The mass of a one mole of the element $^{18}_{8}X$ is equal to,
1. 8 g 2. 18 g 3. 18 - 8 g 4. 18 x 8 g

12. The SI unit of momentum is,
1. kg ms^{-2} 2. kg ms^{-1} 3. N ms^{-2} 4. N ms^{-1}

13. 
Given below is a diagram of few cells observed through compound light microscope. The given cells would be,
1. Cells of onion peel 2. Cheek cells
3. Blood cells 4. Epidermal cells of betel leaf

14. Select the correct answer regarding two isotopes,
1. Mass is equal 2. Atomic number is equal.
3. Electronic configurations are not equal. 4. Valencies are not equal.

15. Given below are three types of cells in the Xylem tissue,
A - Tracheids B - Xylem fibre C - Xylem parenchyma
The living cell / cells from the above is / are,
1. A only 2. B only 3. C only 4. A and B only

16. What is the aim of creating a vacuum between the walls of a thermos flask,
1. Minimize the loss of heat by conduction only.
2. Minimize the loss of heat by conduction and radiation.
3. Minimize the loss of heat by conduction and convection.
4. Minimize the loss of heat by conduction and radiation.

17. The equation $\mathbf{Q = mc\theta}$ is used to calculate the heat change in an aqueous solution. The false statement about it is,
1. Q is the amount of heat 2. m is the mass
3. c is the concentration 4. θ is the difference of temperature

18. The process between fertilization and the impartation has few steps according to the dates. select the incorrect choice regarding them,

	No of dates	Instance
1.	Day 01	Zygote
2.	Day 03	Foetus
3.	Day 05	Morula
4.	Day 07	Blastula

19. The composition of sodium citrate in a saline solution is marked as m/v. The unit of it would be,
1. mol dm^{-3} 2. g dm^{-3} 3. mol kg^{-1} 4. g mol^{-1}

20. The phase that occurs in the ovaries during the female menstrual cycle is,
1. Follicular phase 2. Menstrual phase 3. proliferation phase 4. secretory phase

21. The correct statement about the male gamete, sperm and the female gamete, ovum is,
1. The sex chromosomes of a female are differ from each other.
2. The sex chromosomes of a male are similar to each other.
3. Gamete cells possess only one autosomal chromosome.
4. The X chromosome of males is similar to the X chromosome of females.

22. The incorrect statement about the following reaction is, $NaOH + HCl \longrightarrow NaCl + H_2O$
1. Single displacement reaction. 2. Double displacement reaction.
3. Acid - base reaction. 4. Neutralization reaction.

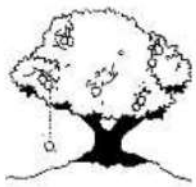
23. Haemophilia and Red-green colour blindness are human inherited diseases. The disorders due to the gene mutations are,

1. Haemophilia and Albinism.
2. Albinism and Red-green colour blindness.
3. Albinism and Thalassemia.
4. Red - green colour blindness and Thalassemia.

24. Choose the correct statement about respiration,

1. The energy profit for the organisms is higher is anaerobic respiration.
2. Energy is produced in both aerobic as well as anaerobic reparation.
3. Glucose molecules are partially break down in aerobic respiration.
4. Muscle cramps are occurred due to the accumulation of ethyl alcohol in cells.

25. The diagram shows the path of the motion of a falling fruit from a mango tree. The factor that does not affect the potential energy processed by the fruit when it is released from the stalk is,

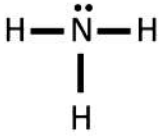


1. Velocity of the fruit
2. Gravitational acceleration the fruit.
3. Mass of the fruit
4. The height from the ground to the fruit.

26. The **correct** statement about an element in the periodic table is,

1. Number of valence elections equal to the atomic number.
2. Number of valence electrons equal to the group number.
3. Number of valence electrons equal to the period number.
4. Group number and the valency number are equal.

27. The Lewis structure of the ammonia molecule is given below. What is the correct statement about it ?



1. Number of electrons in the valence shell of Nitrogen is six.
2. Number of electrons in the valence shell of Hydrogen is one.
3. All the electrons in the valence shell of, Nitrogen do not form bonds.
4. The octate of electrons in the valence shell of Nitrogen is incompleted.

28. Given below are few statements about the effect of the physical nature of reactants on the rate of reaction.

A - The area of the contact surface get reduced when braking a large crystals into powder.
B - The area of the contact surface of reactants get increased when breaking large crystals into powder.
C - The rate of reaction determines by the number of collisions takes place in a unit time.

The correct statements are,

1. A only
2. C only
3. A and B only
4. B and C only

29. The correct statement about the separation techniques is,

1. Common salt is manufactured by evaporating sea water.
2. Recrystallisation always occurs when a hot saturated solution get cools.
3. Simple distillation is the production of distilled water by evaporating well water.
4. Filtering a solution by dissolving in water is the solvent extraction.

30. A machine takes 10 s time to lift an object with 300 kg into the height of 2 m. The rate of doing work by the machine is,

1. $300\ J\ s^{-1}$
2. $450\ J\ s^{-1}$
3. $600\ J\ s^{-1}$
4. $300\ J\ s^{-1}$

31. The correct statement about the "Graphite" and "Diamond" is,

1. Both exist naturally as ionic lattice.
2. The atoms of both are differ for one another.
3. Only the graphite conducts electricity.
4. Hardness of diamod is less than Graphite.

32. Three statements about the electromagnetic waves are given below.

A - Compressions and rarefactions are formed when an electromagnetic wave propagate through a medium.

B - All the electro magnetic waves are subjected to reflection.

C - Velocity of the wave is less in a material medium than in vacuum.

The correct statements are,

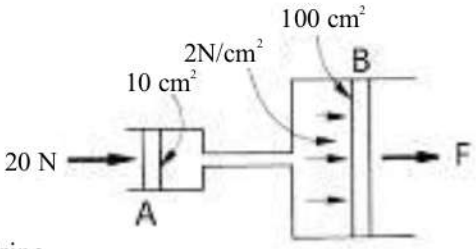
1. AB 2. AC 3. BC 4. ABC

33. A child moves 50 m towards East from the marked point "O" and returned and moves 75 m along the same path. The displacement of the child relative to the point "O" is,

1. 25 m towards East. 2. 125 m towards East. 3. 125 m towards West. 4. 25 m towards West.

34. A step up constructed by using two pistons and a fluid is given in the diagram. What is the force exerted by piston B, when a force of 20 N is applied on piston A ?

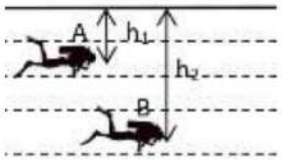
1. 20 N 2. 200 N
3. 200 N 4. 20000 N



35. The pitch of a vibrating string of a guitar does not depends on,

1. Tension of the string. 2. Thickness of the string.
3. Nature of vibrating the string. 4. Vibrating length of the string.

36. The diagram shows the way of swimming two divers in a reservoir. If the density of water is 1000 kg m^{-3}. What is the pressure exerted on the diver B than the diver A ? ($g = 10\ ms^{-2}$)



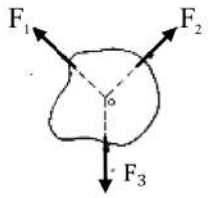
1. $(h_1 - h_2) \times 1000 \times g$ 2. $(h_1 + h_2) \times 1000 \times g$
3. $(h_2 - h_1) \times 1000 \times g$ 4. $h_2 \times 1000 \times g$

37. 10 g of pure NaOH was dissolved in water and water is added till the final volume becomes 250 cm^3. What is the concentration of the solution ? (Na = 23, O = 16, H = 1)

1. 0.25 mol dm^{-3} 2. 0.5 mol dm^{-3} 3. 1 mol dm^{-3} 4. 2 mol dm^{-3}

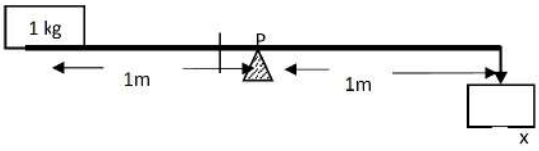
38. Given below shows the equilibrium of an object under three forces. Select the incorrect statement,

1. All three forces lie in same place.
2. The magnitude of the forces F_1 and F_2 are same.
3. The lines of action of the forces F_1, F_2 and F_3 are meet and one common point.
4. The resultant of the forces F_1 and F_2 is qual to the magnitude of the F_3 Force.



39. What is the value of "X" when the rod balanced on the point "P"?

1. 1 kg 2. 1 N
3. 500 g 4. 10 N



40. There is a higher tendency of dispersing disease dengue during certain periods of the year. Select the most appropriate statement regarding this,

1. The dengue disease shows a uniform disperse throughout the year.
2. The disperse of dengue disease is high in rainy seasons due to the increase of mosquito breeding places.
3. Avoiding of taking medicine by people is a reason for rapid dispersion of the disease.
4. Various controlling methods implemented by the health sector do not contribute the disperse of dengue disease.

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DEPARTMENT OF EDUCATION - CENTRAL PROVINCE

Grade 11 | **SECOND TERM TEST - 2022** | **34 S II**

Science II | ***3 hours***

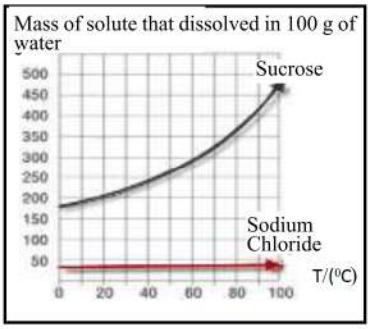
Note : * **This paper consists of two parts A and B.**
* **Answer four questions in part A, in the space provided.**
* **Of the five questions in part B answer three questions only.**

Part - A (Structured Essay)

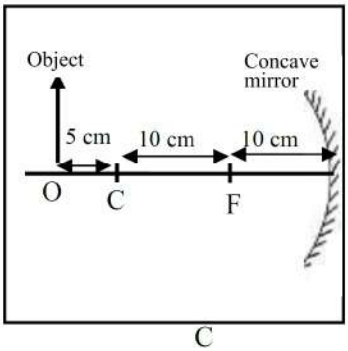
01. A, B and C are three activity cards given for the grade 11 students in an activity. Answer the parts A, B and C based on the information in each activity card.

Bean plants were cultivated in a farm. Tall and short plant could be seen there. Tall feature - T Short feature - t

A



B



C

(A) i. What is the name given for the features that transmit from generation to generation ?

.....(1 m.)

ii. Write the genotype of the heterozygous tall plants and homozygous short plant.

.....(2 m.)

iii. Complete the following punnet square based on the cross between the homozygous tall plants and heterozygous tall plants.

.....

	T	T

(2 m.)

(B) i. Define the solubility of a solute in water. .....

.....(1 m.)

ii. Name the solute and the solvent of sodium chloride solution.

.....(2 m.)

iii. What is the solubility of sucrose at 20^0C ?

.....(1 m.)

iv. How does the solubility of sucrose in water changes when increasing the temperature ?

.....(1 m.)

(C) i. Write two features of the image formed in this instance.

.....(2 m.)

ii. What happen to the size of t he image, when the object O is moving toward the C ?

.....(1 m.)

iii. In which place the object could be placed to obtain an upright image ? .....(1 m.)

iv. In which position the image will be formed. When a convex mirror with 10 cm focal length is kept in the place of the concave mirror after removing it ?.....(1 m.)

02. (A) Living beings are made up of one cell or more cells.

i. Mention the two types of organisms according to the above statement. .....(1 m.)

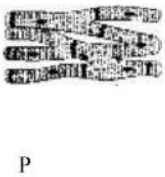
ii. What is the organisational level locates between the tissues and systems according to the organisational levels of an organism ? .....(1 m.)

iii. Complete the following table regarding the cell organelles / structures and their functions.

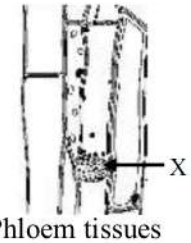
Organelles / structure	Function
Nucleus	i. .....
ii.	protein synthesis
Plasma membrane	iii. .....

(3 m.)

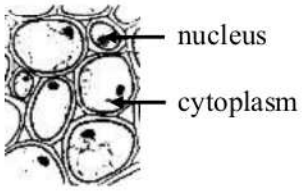
(B) Following diagrams represent three tissues of living beings as P, phloem tissue and Q.



P



Phloem tissues



Q

i. Which can be the animal tissue from the above tissues ? .....(1 m.)

ii. In phloem tissue,

a) Name x .....(1 m.)

b) Write the name of a non living cell.....(1 m.)

iii. Write two special features of the tissue "P",.....

.....(2 m.)

iv. Write two functions of the tissue "Q", ...

.....(2 m.)

(C) Cell division takes place after becoming maximum limit of the cell growth.

i. In which process of the above is occurred during multiplication of cells ? .....(1 m.)

ii. Cell division takes place in two methods as mitosis and meiosis, Represent the mitosis using a sketch.

(1 m.)

03. (A) Some elements were given as P, Q, R and S. They are not true symbols of them,. Some information about those elements are given below.

P - A metal. Used to prevent corrosion of iron.

Q - Exist as diatomic molecule. Make the compound QS with S.

R - There are five electrons in the valence shell. Atomic number is less than 10.

S - Valency is one. The atomic number is greater than 11.

i. a) What is the substance P ?.....(1 m.)

b) What is the element mentioned here which belongs to the fifth group of the periodic table.....(1 m.)

c) What is the group that Q elements is belongs to? .....(1 m.)

d) What is the physical state of the element S ? .....(1 m.)

ii. When P and S react each other,

a) Write the balanced chemical equation for the above reaction,

.....(2 m.)

b) Which type of reaction is it ?

.....(1 m.)

iii. A compound is formed by reacting P and Q.

a) Write the chemical formula of the above compound. .....(1 m.)

b) Draw the Luwis structure of a molecule of that compound.

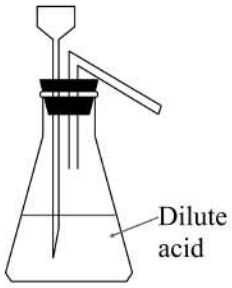
(2 m.)

(B) The part of an apparatus used for preparing a sample of hydrogen gas in the laboratory is given below.

i. Name two glassware that is used to make this apparatus,

.....

.....(2 m.)



ii. Name an acid that can be used as the dilute acid,

.....(1 m.)

iii. Name the material that can be used to produce Hydrogen gas form P, Q, R, S mentioned in part (A) .....(1 m.)

iv. Which type of chemical reaction takes place between the dilute acid and the material that you have mentioned above ? .....(1 m.)

04. (A) An object is being falling vertically down towards a tank with the help of a parachute from an aeroplane. The object at rest was accelerated and moves vertically downwards with a uniform velocity, after opens the parachute. The total mass of the object with the parachute is 100 kg,

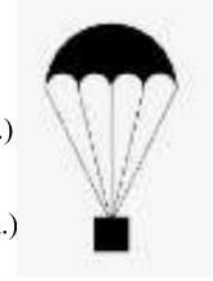
i. Name the forces acting on the object before the parachute opens.

a) The force acting vertically down on the object .....

b) The force acting vertically up on the object .....(2 m.)

ii. Calculate the force acting vertically downward on the object .....

.....(1 m.)



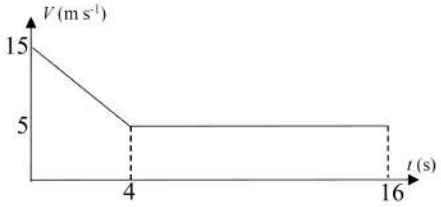
iii. The total upward force acting on the object when the parachute opens is 1500 N. Then the object moves under deceleration and obtain uniform velocity (assume that the deceleration of the parachute as constant)

a) What is the reason for moving the object in deceleration ? .....
.....(1 m.)

b) What is the value of the deceleration it ? .....
.....(2 m.)

c) What is the common name used to introduce the forces acting on the object when it moving at uniform velocity ? .....(1 m.)

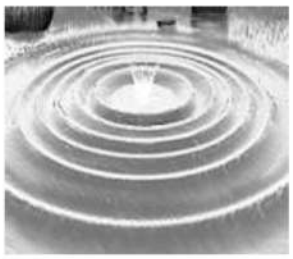
(B) Following diagram shows the velocity time graph of the motion of parachute after it opens and moves at declaration, obtain constant velocity and reaches the tank. (Assume that the deceleration of the parachute as uniform)



i. What is the final velocity obtained by the object after deceleration ?
.....(1 m.)

ii. Find the distance between the surface of water and the place that parachute was opened,
.....(2 m.)

(C) A stone with 0.1 kg was released to a stationary surface of water from 1 m height. The appearance of the crests of water is given in the following diagram.



i. What is the relationship between the propagation direction of the above wave and the direction of the vibration of particles ? .....
.....(1 m.)

ii. The number of consecutive crests formed here in one second is six (6) and the distance between two such crests is 30 cm. What is the wave length (λ) and the frequence (f) of the wave ?

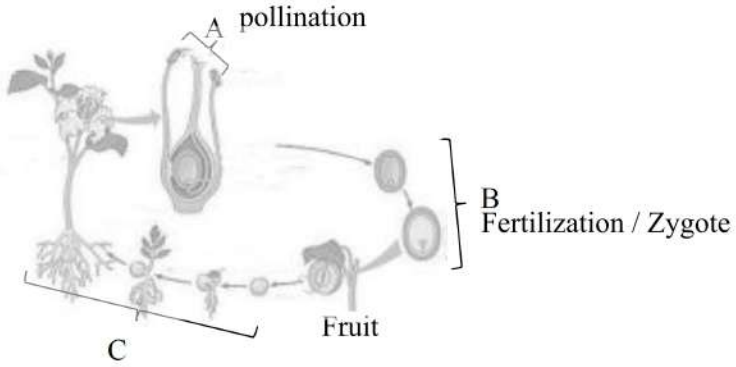
Wave length (λ) .....
frequency (f) .....(2 m.)

iii. Find the velocity of the water wave .....
.....(1 m.)

iv. What is the total amount of energy received by the water wave ?
.....
.....(2 m.)

Part -B (Semi Structured essay)

05. (A) The following diagram represents the three processes occur during the sexual reproduction of plants.



i. Name the process C. (1 m.)

ii. What is meant by pollination ? (1 m.)

iii. Write two adaptations shown by the flowers to avoid self pollination. (2 m.)

iv. Some parts of the flower get changed into the parts of the fruit after fertilization Which parts of the flower are changed into the following parts of the fruit.

a) Seed b) Pericarp (2 m.)

(B) The seed or the fruit store the food that is required for the seed germination.

i. One such type of food is protein,

a) What are the main elements present in protein ? (1 m.)

b) Write two other types of food that are stored in plants. (2 m.)

ii. State a bio molecule except the nutrients. (1 m.)

iii. Write two inorganic compounds in living matter. (2 m.)

(C) The process of producing food in green plants is known as photosynthesis.

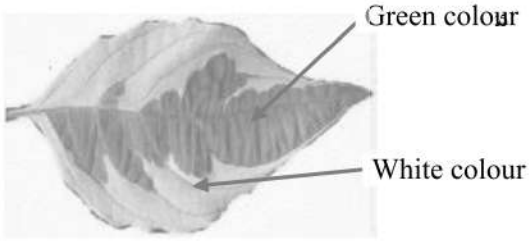
i. The requirement of which necessary factor for the above process is can not be tested in the school laboratory ? (1 m.)

ii. The main product of the photosynthesis process is stored as starch in leaves.

a) Name the main product of photosynthesis. (1 m.)

b) State the reason for boiling the plant leaf first in water during the starch test for a leaf. (1 m.)

iii. A mosaic leaf is given in the diagram.



A control set up is not required when testing the requirement of chlorophyll for the process of photosynthesis using the above leaf. state the reason. (1 m.)

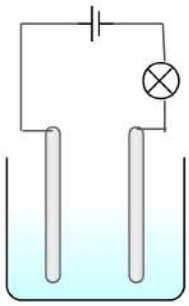
iv. Why it is selected a submerged aquatic plant to test the evolving of oxygen gas during photosynthesis ? (1 m.)

(D) Hormones are involved in chemical co-ordination.

i. State the hormone that is responsible for the water balance of the body. (1 m.)

ii. Write two features of hormones. (2 m.)

06. A set-up constructed to investigate the conductivity of electricity through the aqueous solutions is given below. There are four unlabeled beakers contain distilled water, common salt solution, glucose solution and dilute hydrochloric acid solution.



(A) i. How do you identify the solutions which conduct electricity using the set - up ? (2 m.)

ii. Name the solutions which conduct electricity form the above list. (2 m.)

iii. Which property of the above solutions help to conduct electricity ? (2 m.)

iv. When an aqueous solution of vinegar is added to the beaker, the bulb lights up. But its brightness increases when using dilute hydrochloric acid. Explain the reason for the above difference. (2 m.)

(B) 100 cm^3 of the above salt solution is vaporized and the remained mass of common salt was 11.7 g. (Na - 23, Cl - 35.5)

i. a) Why it is considered the salt solution as a homogeneous mixture ? (1 m.)

b) What is the separating technique used here to obtain the constituents. (1 m.)

ii. Chemical formula of common salt is NaCl.

a) Find the molar mass of it. (2 m.)

b) How many moles of NaCl present in the above mass ? (2 m.)

c) Express the composition of the above salt solution as n/v. (2 m.)

iii. State the separating technics need for followings.

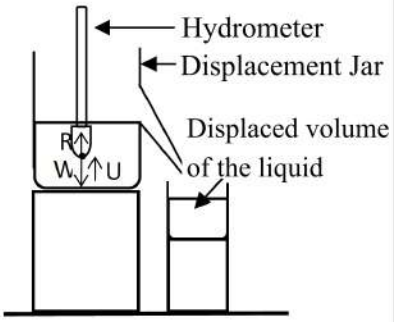
a) Separating the constituents in crude oil. (1 m.)

b) Obtaining distilled water from well water. (1 m.)

iv. Write the compounds which precipitate in first and second tanks of a saltern during the process of salt production. (1 m.)

v. What is the reason for removing the solution form the third tank before precipitating 100% of salt ?(1 m.)

07. (A) Given below is a diagram of a set up constructed by a group of students during an activity. The volume of displaced liquid when immersing the hydrometer is 25cm^3. The mass of displaced liquid is 30 g.



i. Find the volume of the liquid present in the part that the hydrometer is immersed. (1 m.)

ii. Which of the marked forces is equal to the weight of the displaced liquid ? (1 m.)

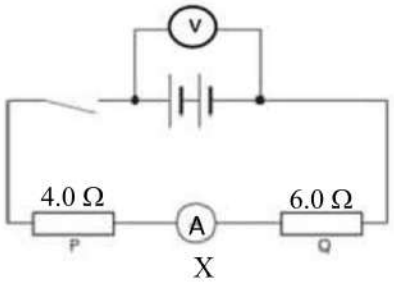
iii. Which pair of forces depicts the action and reaction according to the Newton's 3rd law of motion ? (1 m.)

iv. Find the value of the force "U". (2 m.)

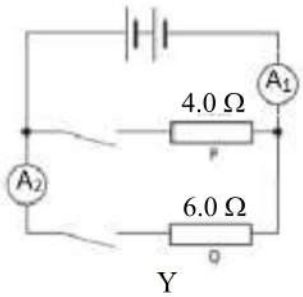
v. Which Law is used to determine the above value ? (1 m.)

vi. State the reading of the hydrometer in kg m^{-3}. (2 m.)

(B) Two circut diagrams are given below. The used batteries are equal in all specification.



X



Y

i. State separately the ways of connecting the resistors in X and Y. (2 m.)

ii. If the resistors P and Q are two heating coils of two heat generating equipment. State an advantage gained by connecting them as in circuit Y. (1 m.)

iii. The Ammeter reading when closing the switch in circuit C is 1.2 A. What is the voltemeter reading in that instance ? (2 m.)

iv. Calculate the equallent resistance of circuit "Y" when both switches are closed. (2 m.)

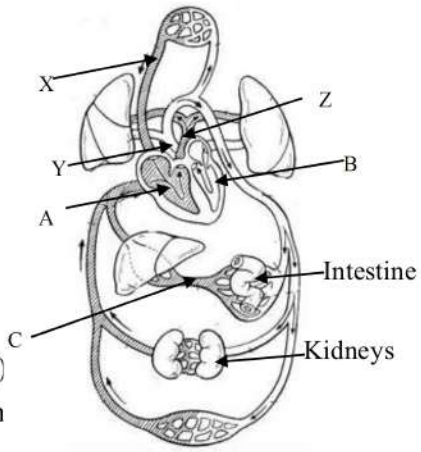
v. The reading of the A_1, in circut Y is 5 A and A_2 is 2A when the both switches are closed.

a) What is the current flowing through P ? (1 m.)

b) Find the potential difference between two ends of the resistor Q. (2 m.)

c) Calculate the amount of heat generated by resistor Q in 300S. (2 m.)

08. (A) Given below is a diagram of the blood circulatory system.



i. a) Name the structure C. (1 m.)

b) Write a difference between the composition of the blood in the chambers A and B. (1 m.)

c) Blood pressure is indicated as 120 mm Hg / 80 mm Hg. On which vessels the above values of pressure are exerted ? (1 m.)

ii. The end products of digestion are absorbed in the intestine.

a) Name the enzyme responsible for the digestion of sucrose. (1 m.)

b) What is the function of the bile that is produced by the liver ?(1 m

c) I. State the end product of digestion that is absorbed by the lacteal. (1 m.)

II. To which system the above end product is absorbed ? (1 m.)

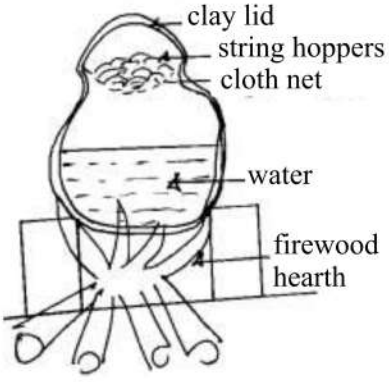
iii. Kidney are the main excretory organs of the human body.

a) Name the functional unit of the kidney.(1 m.)

b) Name a disease associated with the excretory system. (1 m.)

c) Last step of the urine formation is secretion. What is happen in this ? (1 m.)

(B) A traditional steamer that is used to cook string hoppers is given in the following diagram.



i. a) In which one out of the steam and hot water contained higher amount of heat ? Give reason for your answer. (2 m.)

b) The string hoppers cooked quickly when it covered with clay lid so as to prevent the loss of steam to the out. Write a reason for this. (1 m.)

ii. Write a possible change that can be done in order to supply the heat generated in the hearth to water quickly. (1 m.)

iii. The initial temperature of the water in the pot was 30^0C.

a) Calculate the heat gained from the hearth until the water boils. (Specific heat capacity of water 4200 J $kg^{-1}C^{-1}$) (2 m.)

b) The mass of firewood used to boil the water was 4 kg. The amount of heat that can be generated by burning the firewood completely is 2000 kJ. Find the amount of heat wasted when boiling the above water sample. (2 m.)

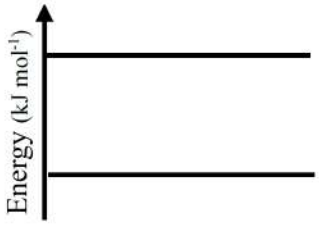
(C) Calculate the efficiency of the firewood heart. (2 m.)

09. (A) Following activity was conducted by a group of students in order to investigate the heat change during a chemical reaction.

* Obtaining 50 ml of aquosus sodium hydroxide solution and 50 cm^3 of dilute hydrochloric acid with equal concentrations.
* Allow them to reach the room temperature and measuring the temperature.
* Mixing the two solutions and measure the temperature. Observed the temperature increased by 3^0C.

i. a) What is the special name used to introduce the above reaction ? (1 m.)
   b) Which litmus paper changes the colour when inserting a red litmus paper and a blue litmus paper into the two solutions separately before mixing them. (2 m.)

ii. a) Is the above reaction is exothermic or endothermic ? (1 m.)
   b) Copy the given energy level diagram and write the relevant reactants and products of the above reaction.

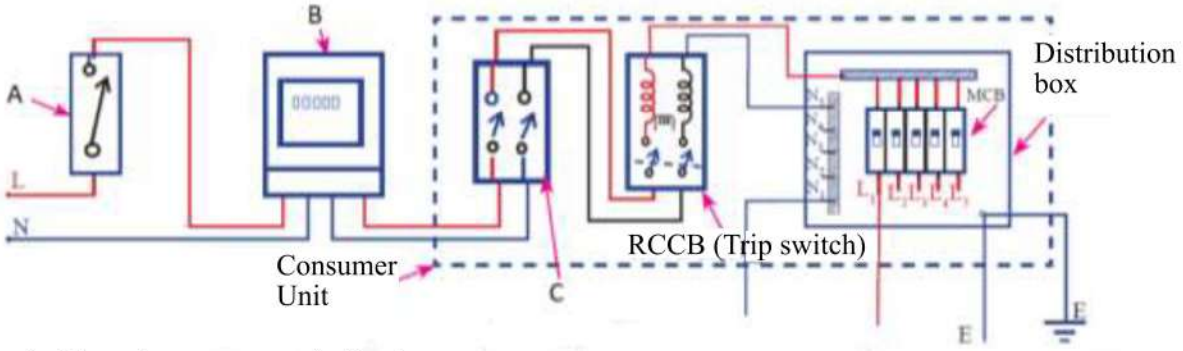


(2 m.)

   c) Indicate by an arrow the change happen in the energy content in the above reaction. (1 m.)

iii. a) State two factors that affect on rate of a reaction. (2 m.)
   b) State the effect of one of the above mentioned factors on the rate of reaction. (1 m.)

(B) Part of a circuit diagram of the household electric supply is given belwo.



i. a) Name the component A. (1 m.)
   b) State the function of "B" . (1 m.)
   c) Which component is used to prevent the accidents caused by electric leakage of the electric appliances ? (1 m.)
   d) Which wire / wires get disconnected when the component "C" is opened ? (1 m.)

ii. What is the number of electrical units consumed in one month by a householder when lighting 6 bulbs with 60 W for about 5 hours daily ? (2 m.)

iii. Write two steps that can be taken in your home to use the electricity efficiently. (1 m.)

iv. State two alternative energy sources that can be used to generate electricity except solar power and water. (1 m.)

v. Write two benefits gained by generating electricity from sunlight than the fossil fuel. (2 m.)