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Provincial Department of Education - NWP

දෙවන වාර පරීක්ෂණය - 11 ශ්‍රේණිය - 2023
Second Term Test - Grade 11 - 2023

SCIENCE - I

Time : 01 hour

Name / Index No. :

Instructions :-

- Write answers to all the questions.
- In questions number 1 to 40, four options are given as (1), (2), (3), (4) for answers. Choose the correct or most appropriate option for each question or answer.
- Mark (X) in the circle provided for the number of the option you have chosen for each question on the answer sheet provided to you.

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01. Ulcers in the corners of the mouth are caused by the deficiency of,?
(1) Vitamin A (2) Vitamin B (3) Vitamin C (4) Vitamin D

02. A Voltmeter and an Ammeter are connected to an electrical circuit respectively,
(1) series and series (2) series and parallel
(3) parallel and series (4) parallel and parallel

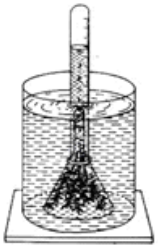
03. In preparing a soft drink, sugar is dissolved in water and then cold water is added to it. What factor effects solubility is focused in this?
(1) temperature (2) nature of the solvent (3) nature of the solute (4) pressure

04. The organelle that produces energy in cell is,
(1) Mitochondria (2) Nucleus
(3) Golgi complex (4) Chloroplast

05. What is the relative molecular mass of $CO(NH_2)_2$? (C= 12, O= 16, N=14, H= 1)
(1) 44 (2) 46 (3) 60 (4) 88

06. Which of the following statements about friction is correct?
(1) Frictional force always impedes motion
(2) The presence of grooves in the tyres make the contact surface rough.
(3) Applying grease or oil between contact surfaces always reduces friction.
(4) In rainy days, water enters the grooves of the tyres and the tyre touches the road, causes friction.

07. The figure shows a diagram of a plant to identify the products of photosynthesis. Which of the following is a method of detecting the accumulation of gas in the test tube?



(1) Passing through the lime water and observe if it turns milky colour.
(2) Inserting a glowing splinter and observe whether it relights.
(3) Inserting a lighting flame and observe whether it diminishes with a 'pop' sound.
(4) Inserting a glowing splinter and observe whether it diminishes with a 'pop' sound.

08. Electronic configurations of Na^+ ion and Cl^- ions in the NaCl lattice respectively are,
(1) 2,8 and 2,8,8 (2) 2,8,1 and 2,8,8
(3) 2,8 and 2,8,8,1 (4) 2,8,1 and 2,8,8,1

09. In order to retain heat in a thermos flask, heat loss should be minimized by,
(1) conduction and convection (2) Convection and radiation
(3) Conduction and radiation (4) Conduction, convection and radiation

10. Which of the following is the correct way of printing the scientific name of the coconut plant?

(1) *Cocos nucifera* (2) Cocos nucifera (3) Cocos Nucifera (4) *cocos nucifera*

11. What phase of the female reproductive system can explain the changes occur in the ovary?

(1) Menstrual phase (2) follicular phase (3) secretory phase (4) Proliferation phase

12. Which statement is correct about the endothermic reactions?

(1) Heat is released during the reaction.

(2) Energy possessed by the products is less than the energy of reactants.

(3) Burning of limestone is an example for endothermic reaction.

(4) Endothermic reaction is taken place when water is added to the burnt lime.

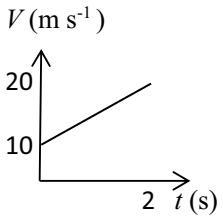
13. What is the acceleration done according to the given velocity-time graph?

(1) 2 m s^{-2}

(2) 5 m s^{-2}

(3) 10 m s^{-2}

(4) 20 m s^{-2}



14. Which of the following is the correct statement regarding the diseases related to reproductive system?

(1) AIDS is contagious by a mosquito that has been bitten an AIDS patient bites a healthy person.

(2) Those who engage in social vices are sick and should be rejected from society.

(3) All infectious diseases related to the reproductive system show symptoms related to the reproductive organs.

(4) These diseases can be controlled by being responsible about the sexual behaviour.

15. The formula of the compound formed with Oxygen by X element is XO. The formula of the compound Y formed with element Hydrogen is HY. What is the formula of the compound that element X formed with element Y?

(1) XY_2 (2) YX_2 (3) X_2Y (4) Y_2X

16. An object of mass 5kg moves with a velocity of 4 m s^{-1}. How much kinetic energy is obtained by that object at that moment?

(1) 10 J (2) 20 J (3) 40 J (4) 80 J

17. * Drink enough water

* Consume fiber-rich food

What is the disease related to digestive system can be prevented by these habits?

(1) Constipation (2) Gastritis (3) Diarrohea (4) Typhoid fever

18. Consider the statements regarding the isotopes of Carbon $^{12}_{6}C$ and $^{14}_{6}C$.

(A) Number of protons are same in two atoms.

(B) Number of neutrons are same in two atoms.

(C) Number of electrons in the $^{12}_{6}C$ is 12 and number of electrons in $^{12}_{6}C$ Is 14.

The false statements from above are,

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

19. The figure below shows the arrangement prepared by a group of students to demonstrate Newton's laws. Consider the statements of the students regarding the arrangement.

(A) Opposite to the direction in which the air leaves.

(B) Pushes the air molecules by the membrane.

(C) The balloon moves because the air molecules in the atmosphere push the balloon.

The true statements from the above are,

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

20. The apparatus in the figure is used to,

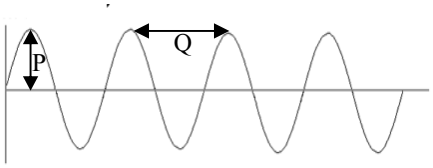
(1) separate solvents by solvent extraction.

(2) to cool the vapor in simple distillation.

(3) to dissolve solutes in the preparation of standard solutions.

(4) to dissolve solutes into a volumetric flask.

21. The motion of a wave at one second is shown in the figure. In which the wavelength, amplitude and frequency are shown correctly?



(1) P,Q and 4 Hz

(2) Q,P and 4 Hz

(3) P,Q and 0.25 Hz

(4) Q,P and 0.25 Hz

22. A common hereditary characteristic and a rare hereditary characteristic are mentioned respectively,

(1) rolling the tongue and fused earlobes

(2) Fused earlobes and syndactyl

(3) polydactyl and syndactyl

(4) polydactyl and straight thumb

23. Consider the following statements about the element Magnesium. (Mg = 24)

(A) Relative atomic mass of Magnesium is 24.

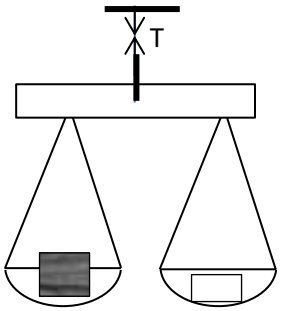
(B) Mass of one mole of Magnesium is 24g.

(C) The molar mass of Magnesium is 24 g mol^{-1}

Which of these statements are correct?

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

24. A mass of 1kg is accurately weighed with a pan balance as shown in the figure. The mass of the pan balance is 1kg.The amount of tension (T) on the string which the balance hang is,



(1) 2 kg

(2) 3 kg

(3) 20 N

(4) 30 N

25. Nonliving cells that do not undergo photosynthesis are,

(1) Collenchyma cells (2) Parenchyma cells

(3) Sclerenchyma cells (4) Companion cells

26. Which of the following is not an exothermic reaction?

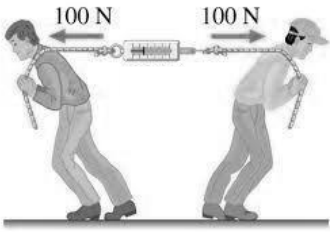
(1) Combustion of fuel to operate automobile air conditioners.

(2) Undertaking the neutralization reaction to relieve the acidity in stomach.

(3) Photosynthesis in green plants.

(4) Burning of glucose in the human body to produce the energy needed for body.

27. Two persons applied two forces on a Newton spring balance as shown in the diagram. What is the reading of the Newton spring balance?



(1) 0 N

(2) 100N

(3) 200 N

(4) 400 N

28. Tallness of a plant is the dominant trait(T) and the shortness (t) is the recessive trait. When a heterozygous tall plant is crossed with a homozygous short plant , the plants in the F1 generation ,

(1) All are tall plants.

(2) All plants are short plants.

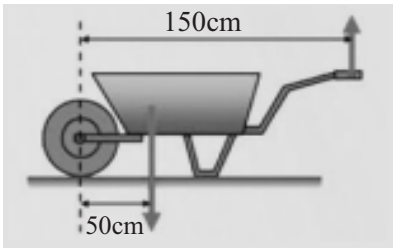
(3) 50% are tall plants and 50% are short plants.

(4) 75% are tall plants and 25% are short plants.

29. An example of a weak acid,

(1) H_2SO_4 (2) HCl (3) H_2CO_3 (4) HNO_3

30. A wheelbarrow is loaded with a mass of 60kg. The figure shows how its forces work. What is the force required to lift the wheelbarrow?



(1) 20 N

(2) 200N

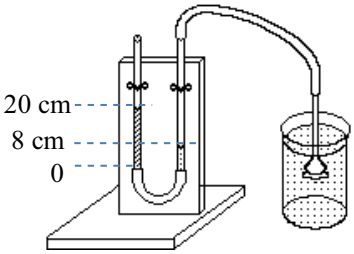
(3) 300 N

(4) 600 N

31. Which of the metal does not react with diluted Sulphuric acid ?

(1) Na (2) Mg (3) Zn (4) Cu

32. The figure shows a set up used to find the pressure of a given liquid. A balloon membrane is attached to the end of the thistle funnel and the funnel is connected to the glass tube with a rubber tube. The two glass tubes are connected at the bottom by another rubber tube and a dense liquid is placed inside it. When the funnel is immersed in water to a certain level, the liquid level is shown as given. What is the pressure exerted by the water at that depth?



(1) 0.28 x ρ x 10 Pa (2) 0.20 x ρ x 10 Pa

(3) 0.12 x ρ x 10 Pa (4) 0.08 x ρ x 10 Pa

33. Which statement is correct about respiration?

	Oxygen requirement	Energy produced	Introduction
(1)	less	more	Aerobic respiration
(2)	more	more	Aerobic respiration
(3)	more	less	Anaerobic respiration
(4)	more	more	Anaerobic respiration

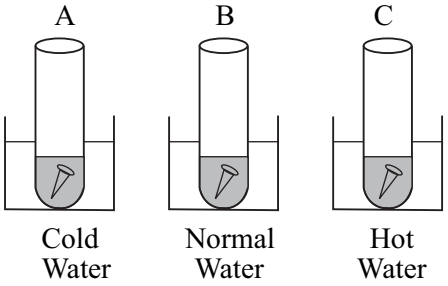
34. Given below is a set up used to study the effect of temperature on the rate of reaction. Cleaned iron nails are placed in acidified KMnO solutions. The order of the discoloration is,

(1) A,B and C

(2) A,C and B

(3) C, A and B

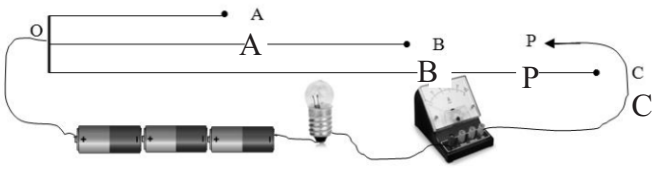
(4) C,B and A



35 A circuit designed for an activity to study the factors affecting the resistance of a conductor is shown in the figure below. It uses three nickrome wires of equal cross - sectional and equal length.

(A) The brightness of the bulb and the reading of the mili ammeter are at their maximum level when P touches A.

(B) The brightness of the bulb and the reading of the mili ammeter are at their maximum level when P touches C.



(C) When the material of the conductor is changed the brightness of the bulb and ammeter reading changes.

Which of the following statements is correct

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

36. Consider the following statements regarding the characteristics of sound.

(A) Pitch depends on the frequency of the sound.

(B) The loudness of the sound is determined by the amplitude of the sound.

(C) Quality of the sound depends on the source of the sound.

The true statements are ,

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

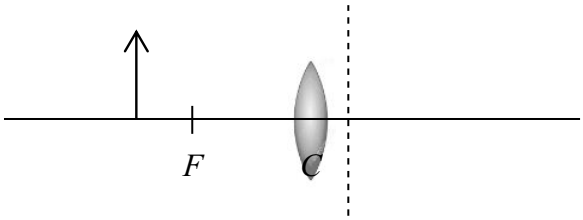
37. The figure shows how an object is placed in front of a convex lens. What are the characteristics of the image formed by this object?

(1) inverted , real, same in size of object

(2) upright , virtual , larger than the object

(3) inverted , real , larger than the object

(4) inverted, real , larger than the object



38. Following are some facts about total internal refraction.

(A) Light must travel from a rare medium to dense medium.

(B) The angle of incidence must be greater than the of the two medium.

From the facts,

(1) A is true and B is false.
(2) B is true and A is false.
(3) A and B are true.
(4) A and B are false.

39. LED bulbs are the most efficient of all the bulbs." This statement means, LED bulbs,

(1) emit light as soon as the switch is on.
(2) use less amount of electricity relatively to the other bulbs.
(3) emit relatively high light by a lower power.
(4) use for television, mobile phones and screens of the computers

40. Research has been done on pumping water upward without electricity is impossible. Which is the most reasonable statement in this regard?

(1) Drive the car in a uniform velocity at all the times.
(2) Since such acts have been done in the past, research should be done on it.
(3) We need to find out whether this type of research is being done in more developed countries.
(4) It is appropriate to conduct research because there are scientific theories that have not been discovered in the past.

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Second Term Test - Grade 11 - 2023

SCIENCE - II

Time : 03 hours

Name / Index No. :

Instruction :

- **Answer four questions in part A in the space provided.**
- **Answer only three questions in part B.**
- **Attach both A and B answer scripts together after answering and handover.**

Part A

(01) There is a ripped mango fruit with mass of 200g which is attached on a tree of 10m height from the ground.

(i) Write two external forces act on the mango fruit attached to the tree. (02m.)

.....

.....

(ii) What is the resultant force act on the mango fruit attached to the tree? (01m.)

.....

.....

.....

(iii) What is the potential energy of the mango fruit? **($g = 10\ m\ s^{-2}$)** (03m.)

.....

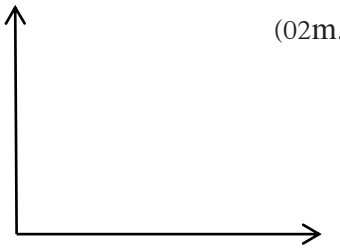
.....

.....

(iv) The mango fruit detatched down from the tree. (02m.)

Draw the rough velocity time graph for the motion.

Label the axes correctly.



(v) If red and purple patches observed on the leaves of mango tree, which mineral deficiency is found in the mango tree?

..... (01m.)

(vi) What is the main type of bio molecule found in the mango fruit?

..... (01m.)

(vii) Through which tissue, water absorbed from the soil is transported to the upper part of the mango tree?

..... (01m.)

(viii) Which specific property of water is important for transporting water upwards through the stem?
.....(01m.)

(ix) What is the type of bond found among the atoms of a water molecule?

..... (01m.)

(x) Draw the Lewis structure of water molecule. (02m.)

15

02. (A) The figures A, B, C and D show four organisms exhibited in the school laboratory. Use relevant letters to indicate the organisms when answering.




A B C D

(i) Classify the above organisms as vertebrates and invertebrates. (02m.)

Vertebrates	Invertebrates

(ii) Name the domain and kingdom of the organisms shown by A, B, C and D. (02m.)

Domain :..... Kingdom : .....

(iii) State the letter relevant to the organism or organisms relevant to the information given in the following table. (04m.)

Information	Letter relevant to the organism or organisms.
(a) Presence of muscular foot for locomotion	.....
(b) Presence of a stream line body shape for locomotion.	.....
(c) Warm blooded	.....
(d) Prescence of jointed appendages	.....

(i) Name the phylum of the above B and C groups of animals. (02m.)

B ..... C .....

(B) There are 23 pairs of homologous chromosomes in the nucleus of a human cell.

(i) Write the number of chromosomes in somatic cell and gamete cell of human respectively (01m.)

.....

(ii) Explain briefly how meiotic cell division contribute to maintain a constant number of chromosomes from generation to generation. (02m.)

.....

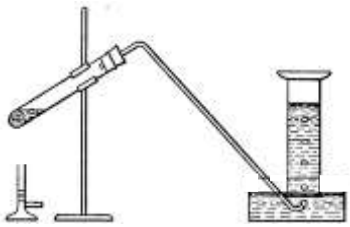
.....

(iii) State how meiotic cell division differ from mitotic cell division.

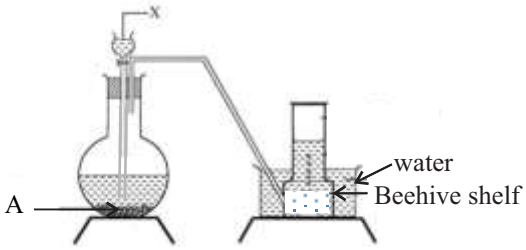
..... (02m.)

15

03. P and Q diagram show two apparatus used by a group of students to prepare gases.



P apparatus



Q apparatus

(i) If oxygen gas is produced by P apparatus which chemical compound has put in to the boiling tube? (01m.)

.....

(ii) Write two observations can be seen in the gas jar of P apparatus after igniting the burner. (02m.)

.....

(iii) Simply state the way of identifying the produced gas as oxygen. (01m.)

.....

(iv) Hydrogen and oxygen gases can be produced by using suitable chemical substance using an apparatus like Q. Complete the following table relevant to it. (04m.)

Gas produced	Substance can be used as x	Substance can be used as A
Carbon dioxide		
Hydrogen		

(v) A student suggests that the thistle funnel in Q apparatus should keep above the level of solution. Do you agree with this suggestion? State the reason for it. (02m.)

.....

(vi) Instead of downward displacement of water in Q apparatus, name the gas that can be prepared by keeping the gas jar in the following way (02m.)

(a) Downward displacement of air - .....

(b) Upward displacement of air - .....

(vii) Oxygen gas can be prepared by using the apparatus Q. The reaction take place is given below,

$2H_2O_2 \xrightarrow{MnO_2} 2H_2O + O_2$

What is the type of reaction according to the formation of products from the reactants?

..... (01m.)

(iv) State a use of carbon dioxide gas and write the physical property used for that. (02m.)

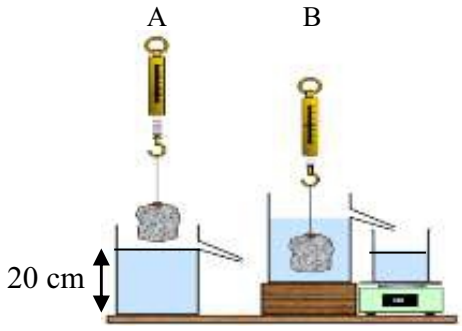
.....

.....

15

04. A Following diagrams show some steps of an experiment used to examine about upthrust. (***g* = 10 m s^{-2}**, Density of water - **1000 kg m-^{3}**)

- The mass of the object hung in the newton balance is 100g.
- The weight of collected water when the object completely immersed in water is W_1.
- Water in the overflow vessel was filled up to 20 cm.



(i) What is the change in the newton balance reading when the object gradually immersed in water? (01m.)

.....

(ii) In the object hung in the newton balance,

(a) If the weight before immersed in water in A situation is W, what is the value of W? ..... (02m.)

(b) Show the weight of the object in B situation after completely immersed in water using W and W_1. (01m.)

.....

(iii) What is the upthrust acts when the object completely immersed in water? (01m.)

.....

(iv) A student says that the value of upthrust does not change although the object immersed further in water without contact the bottom of the vessel. How you explain this statement? (02m.)

.....

.....

(v) A hydrometer is calibrated increasing the value from top to bottom. Simply explain the suitability of this. (02m.)

.....

.....

(vi) Calculate the pressure created by water column of 20cm at the bottom of overflow vessel.

(03m.)

.....

.....

(vii) The total volume of overflowed water was put in to a measuring cylinder with less diameter than the overflow vessel. Is that the pressure created by water column at a point of bottom, increases or decreases than the value obtained in answer (v). State the reason. (02m.)

.....

.....

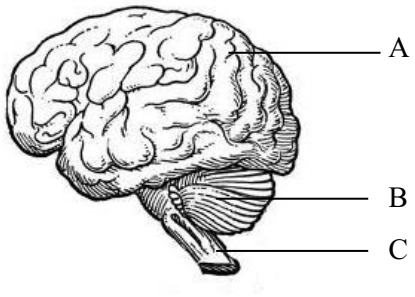
(viii) Write an example for a situation where pressure transmission of liquids is used in day today life. (01m.)

.....

15

Essay

05. A All the human activities are controlled by the brain. It contains so many parts. Three main parts of it are given below.



(i) Name A, B and C (03m.)

(ii) Mention the letters of the parts perform the following functions. (04m.)

(a) Control the rate of heart beat

(b) Maintenance of body balance

(c) Control reflex actions such as vomiting and coughing

(d) Perform mental activities such as learning & thinking

(iii) State the functional unit of nervous system (01m.)

(iv) Autonomic nervous system which controls by the brain composed of two parts as sympathetic nervous system and parasympathetic nervous system. Explain the changes done by sympathetic nervous system using a suitable example. (02m.)

(B) Haemophilia is a disease that occurs due to a X linked recessive gene only present in males in the population. H is the dominant gene for haemophilia.

(i) State the genotype a healthy male and carrier female. (02m.)

(ii) Use a punnette square to illustrate the phenotypes of the child belong to first generation (03m.)

(iii) It is important not to marry blood relatives. Explain the above statement. (02m.)

(iv) "Males are not carriers for haemophilia but are carriers for thalassemia". How would you explain the above statement. (02m.)

(v) State an example where gene technology applies on the field of food production and agriculture. (01m.)

(Marks 20)

06. (A) Thinner, distilled water and sodium chloride were used for an activity in the laboratory.

(i) Write above two substances respectively, which can be mixed with distilled water to prepare a homogeneous mixture and a heterogeneous mixture. (01m.)

(ii) Write an observation that could be obtained to prove that a certain "standard solution" is a homogeneous mixture. (01m.)

(iii) "Distilled water is a pure substance". Simply describe the above statement. (01 m.)

(iv) A solution was prepared by dissolving 5g of sodium chloride in 95g of distilled water. Express the composition of the Sodium Chloride as a mass fraction. (02 m.)

(B) The components of a mixture can be separated by simple physical methods.

(i) Explain how to separate the component of the following mixtures, (02 m.)

(a) Salt mixed with sand

(b) Tea powder mixed with iron powder

(ii) Mention two separation techniques use in the production of salt from sea water. (01 m.)

(iii) State the formulae of the chemical compounds separated in the first, second & third tanks respectively. (02 m.)

(C) Na, Mg, Al, Si, P, S, Cl, Ar are the elements belong to third period. Mention the element/elements related to the information given below in the table. (10 m.)

INFORMATION	Element/elements
Element with highest electro negativity.	i.
Element with lowest electro negativity.	ii.
Element with highest first ionization energy.	iii.
Two elements have the lower first ionization energy than Mg.	iv.
Element with metalloid properties.	v.
Element which forms amphoteric oxide	vi.
Element which forms strongly basic oxide.	vii.
Element which forms strongly acidic oxide.	viii.
A metal less dense than water.	ix.
Metal uses as a sacrificial metal to prevent corrosion.	x

07. (A) Accidents have occurred due to the inability to see the oncomimg vehicles in the bends of the road. Convex mirrors have been fixed on the both side of the road to prevent such accidents.

(i) Write down three properties that can be seen in the image observed by convex mirror when a vehicle approaches. (03 m.)

(ii) Mention a disadvantage of using a concave mirror instead of a convex mirror. (01 m.)

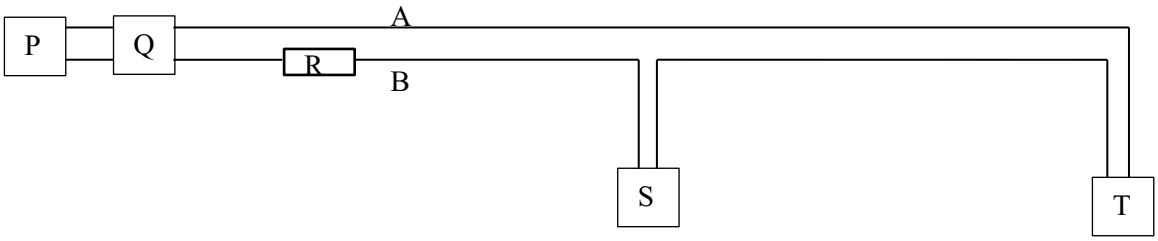
(iii) Draw a ray diagram using a suitable scale for an object which was kept 40 cm away from a convex mirror whose focal length was 20 cm. Represent the object by a vertical line with an arrow head. (03 m.)

(iv) Explain using one type of ray used to draw the ray diagram, that the diagram was drawn according to the law of reflection. (01 m.)

(v) The word AMBULANCE written upside down on the front of an ambulance utilizes which characteristic of reflection in a convex mirror? (01m.)

(vi) State the type of lens which gives the same features of the image given by a convex mirror ? (01m.)

(B) Below is a part of a domestic circuit drawn by a student.



(i) Name P, Q, R, S and T (03m.)

(ii) Write the letters which marked live and neutral wires respectively. (02m.)

(iii) State the letters of the components which perform the following functions. (03m.)

(a) Automatically switch off in the case of electric shock or ground leakage.

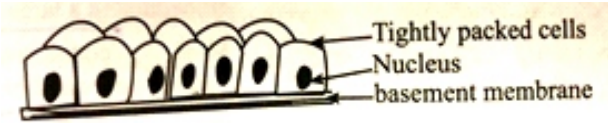
(b) If a high current flows in the circuit it is disconnected preventing damage to the circuit.

(c) This should be disconnected when fixing a plug socket.

(iv) Find the amount of energy consumed in joules when operating 100W bulb for six hours. (02m.)

(20m.)

08. (A) The figure shows an epithelial tissue.



(i) Write 2 properties of epithelial tissue. (01m.)

(ii) Mention 2 functions of epithelial tissue. (02m.)

(iii) State 2 locations of epithelial tissues. (02m.)

(iv) Name the epithelial tissues which perform the following functions. (02m.)

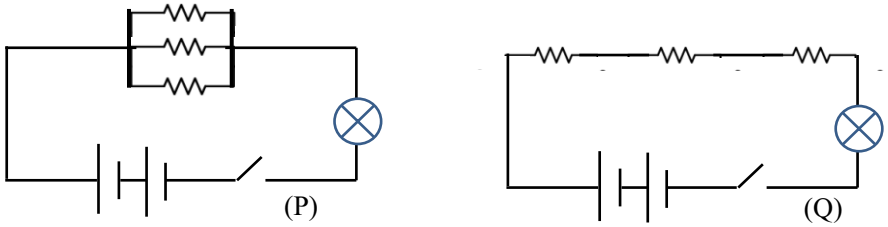
(a) Transport materials.

(b) Perform movements.

(B) (i) Name 2 tissues which perform photosynthesis in plants. (02m.)

(ii) Which tissue transports glucose produce during photosynthesis as sucrose. (01m.)

(C) Three equal resistor whose resistance is R, two cells with equal electromotive forces and two equal bulbs were connected to P and Q.



(i) Bulb in which circuit has the highest brightness after closing the switch. (01m.)

(ii) Mention the reason for reducing the brightness of the bulb in one circuit (01m.)

(iii) Name the type of combination of resistors in **P** and **Q** respectively (02m.)

(iv) Write suitable equations to find the equivalent resistance **R** of **P** and **Q** separately (02m.)

(v) If equivalent resistance and the electro motive force is 2Ω and 6V respectively find the current flow through the circuit. (03m.)

(vi) Copy one of the circuit given above and show in a diagram, how to connect a voltmeter to measure the electromotive force. (01m.)

(20 Marks)

09. A. A piece of aluminium heated up to 80^0C is placed in a vessel containing 500g of water at 30^0C. Then the temperature in the water rose up to 50^0C.
(Specific heat capacity of water is 4200 J kg^{-1} K^{-1})

(i) What is the reason to pass the heat from piece of aluminium to water (01m.)

(ii) Convert 80^0C in to Kelvin (01m.)

(iii) Specific heat capacity of water is 4200 J kg^{-1} K^{-1}' Explain the meaning of the above Statement. (02m.)

(iv) Calculate the amount of heat required to raise the temperature of 500g of water at 30^0C to 50^0C (03m.)

(v) Freezing and melting points of water is 0^0C' simply explain the statement. (02m.)

(vi) Mention a situation where it is useful to have a high latent heat of vapourization of water. (01m.)

B. There are two solutions in two unlabelled beakers in the lab.

(i) Explain how you would distinguish an acid from a base if you were given the following substances.

(a) A piece Mg (02m.)

(b) A few grains of $CaCO_3$ (02m.)

(c) pH papers (02m.)

(d) phenolphthalein solution (01m.)

(e) methyl orange solution (01m.)

(ii) Name two products form by the reaction between acids and bases (01m.)

(iii) Give an example for an instance where neutralization of acids and bases is used in day today life. (01m.)

(Marks 20)