දකුණු පළාත් අධ්‍යාපන දෙපාර්තමේන්තුව
தென் மாகாணக் கல்வித் திணைக்களம்
Department of Education, Southern Province

අවසාන වාර පරීක්ෂණය - 2023 (2024)
ஆண்டிறுதிப் பரீட்சை - 2023 (2024)/ Final Term Test - 2023 (2024)

ශ්‍රේණිය தரம் Grade } Grade 11 | SCIENCE - I | කාලය நேரம் Time } One Hour

නම பெயர் Name ..... විභාග අංකය சுட்டிலக்கம் Index No. .....

Part - I

- **Answer all questions.**
- **Each question from No. 1 to 40 is provided with four options as (1), (2), (3) and (4). Select the option that matches with the answer for each question.**
- **Mark a (X) on the number of the option you selected for each question in the answer script provided to you.**

---

01. Of the following, what is the organizational level that the human kidney belongs?
(1) Cell (2) Tissue (3) Organ (4) System

02. Of the following, which physical quantity is measured with the unit $kgms^{-1}$?
(1) Work (2) Momentum (3) Force (4) Moment

03. What is the difference between $^{23}_{11}Na$ and $^{23}_{11}Na^{+}$?
(1) Number of protons
(2) Number of electrons
(3) Number of neutrons
(4) Sum of number of protons and neutrons

04. Which of the following plant tissues perform the function of transportation?
(1) Collenchyma (2) Sclerenchyma (3) Parenchyma (4) Phloem

05. Of the following, which two kingdoms have autotrophic organisms?
(1) Protista and Fungi (2) Plantae and Protista (3) Fungi and Plantae (4) Plantae and Animalia

06. Which option bears a hydrocarbon?
(1) CH_4 (2) C_2H_5OH (3) $C_6H_{12}O_6$ (4) $CaCO_3$

07. The components that contribute to conduct electricity in an aqueous solution of NaCl,
(1) Only (+) ions
(2) Only (-) ions
(3) Only (+) ions and (-) ions
(4) Only water molecules and (+) ions

08. The displacement of an object travelling with a uniform velocity of $2ms^{-1}$ during 4s is,
(1) 2 m (2) 4 m (3) 6 m (4) 8 m

- Question no. 9 and 10 are based on the following chemical equation.

$$P\,CH_{4(g)} + Q\,O_{2(g)} \longrightarrow R\,CO_{2(g)} + S\,H_2O_{(g)}$$

09. The letters ***P,Q,R*** and ***S*** in the equation represent,
(1) 1, 1, 1, 1 (2) 1, 2, 1, 2 (3) 2, 1, 2, 1 (4) 1, 2, 2, 1

10. How many molecular moles of O_2 should react to form one mole of water?
(1) 4 (2) 3 (3) 2 (4) 1

11. Which of the following statements is true regarding skeletal muscle cells?
(1) Cylindrical, striated and multinucleated
(2) Branched, striated and uninucleated
(3) Spindle shaped, unstriated an uninucleated
(4) Cylindrical, unstriated, multinucleated

12. Of the following, which statement is true?
    (1) Virtual, upright, diminished images are formed only by convex mirrors.
    (2) Convex lenses form only real images.
    (3) Concave lenses form only virtual, upright, diminished images.
    (4) Plane mirrors form only real images.
13. What is the hydrostatic pressure exerted at a depth of 2.5m in a liquid with the density of 800kgm^{-3}?
    (1) 2.5 x 800 x 10 Pa
    (2) 2.5 x 800 x 10 Pa
    (3) 250 x 800 x 10 Pa
    (4) 250 x 800 ÷ 10 Pa
14. The number of plants in a unit area of an ecosystem is counted. The values are given in the table below.

Type of Plant	Nephrolepis	Cycus	Grass	Polpala
Number	4	1	6	4

How many seed bearing plants are in the above area?

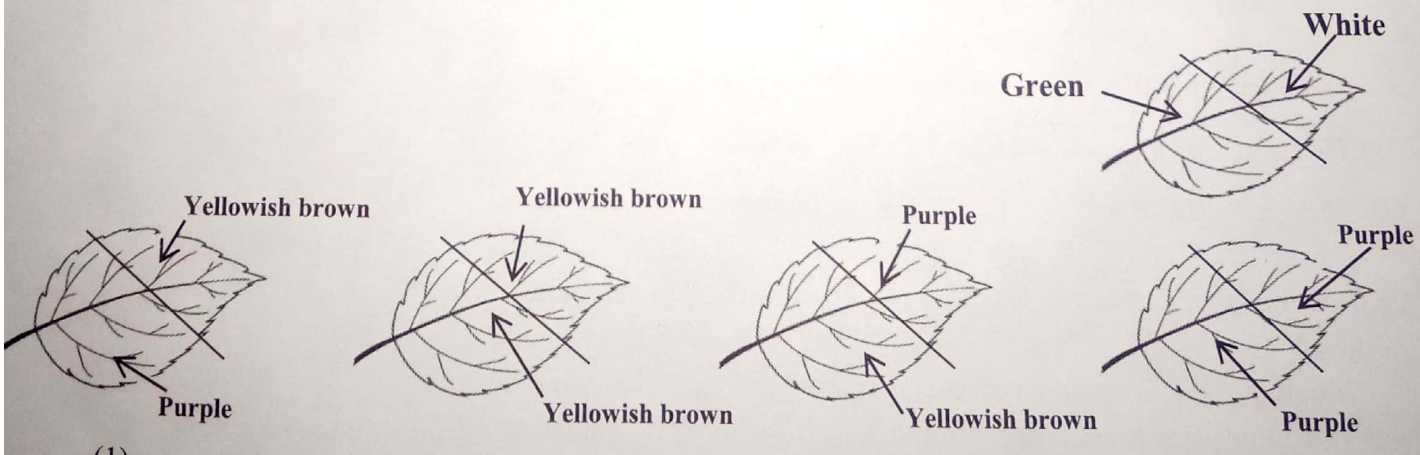
(1) 15 (2) 11 (3) 10 (4) 5

15. Which statement is true regarding all of the following molecules?

* CH_4 * CCl_4 * HCl * H_2

(1) Only single bonds are between atoms.
(2) Each molecule has a pair of lone electrons
(3) Exist as gases at room temperature.
(4) There are polarized bonds.

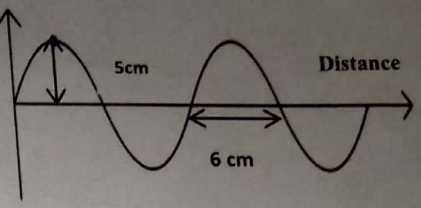
16. Luteinizing hormone is produced by,
    (1) Liver (2) Ovary (3) Pituitary (4) Pancreas
17. Two statements are given below.
    A – Refractive index of water is greater than air.
    B – A light ray that refracts from air to water with an angle of incidence of 30^0, forms an angle of refraction less than 30^0.
    Which of the following options is true related to the two statements above?
    (1) A is true, B is false
    (2) A is true, B is true
    (3) A is false, B is true
    (4) A is false, B is false.
18. An electric iron with the power of 1150W is connected to a power supply with the potential difference of 230V. What is the current flowing through the iron?
    (1) 1380 A (2) 920 A (3) 5 A (4) 0.2 A
19. How much is mass of NaOH necessary for preparation of 0.5 dm^3 of NaOH solution with the concentration of 0.2 mol dm^{-3}? (Na = 40, H = 1, O =16)
    (1) 0.04 g (2) 0.4 g (3) 4 g (4) 40 g
20. A leaf detached from a plant growing in an open place is illustrated below. The leaf is tested for starch. Which of the following options correctly illustrate the observations made?



21. The position of a water wave that forms on a water surface at a certain moment is illustrated below. The wavelength and the amplitude of this wave in respective order are,

(1) 5cm & 6cm (3) 12cm & 5cm

(2) 12cm &10cm (4) 6cm & 5cm

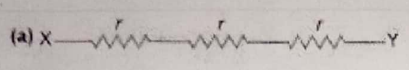


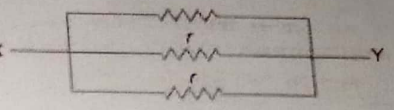
22. A cleaned piece of magnesium is added to dilute HCl acid in a test tube. Of the following, which is not an example of the above activity?

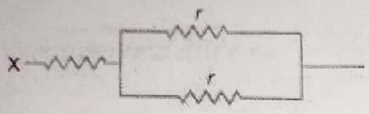
(1) Evolving hydrogen gas (3) Dissolving piece of magnesium

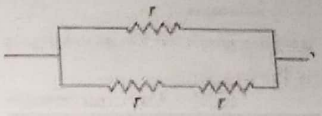
(2) Evolving gas bubbles (4) Becoming the test tube hot.

23. Four ways of connecting three uniform resistors are illustrated below. If same potential difference is given for terminals of all circuits, in which circuit does maximum current flow?

(1) 

(2) 

(3) 

(4) 

24. Four statements P, Q, R and S are made in relation to the female reproductive system.

P - Matured ova are released to the body cavity.

Q – Fertilization occurs in the fallopian tube.

R – Morula sinks and deposits in the tissues of uterus.

S – Blood of mother and fetus mix via the placenta.

Out of those statements, the true statements are,

(1) Only P &Q (2)Only Q & R (3) Only P, Q & S (4) Only P, Q & R

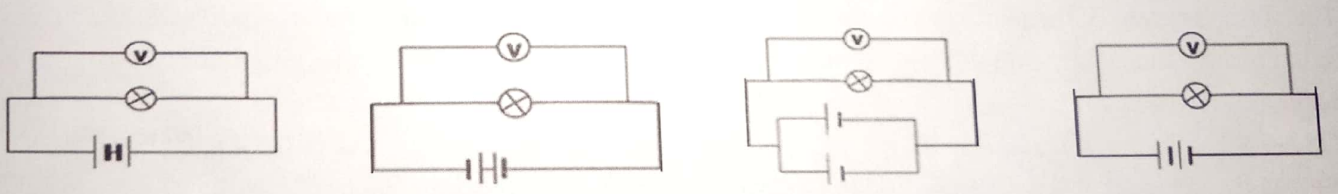
25. Which of the followings is the sexually transmitted disease?

(1) Herpes (2) Measles (3) Hepatitis (4) Pneumonia

26. An object with the weight of 40N is lifted to a vertical height of 2m within 5 seconds. What is the rate of doing work?

(1) 400 W (2) 200 W (3) 16 W (4) 4 W

27. Which of the following instances has the highest voltmeter reading?



(1) (2) (3) (4)

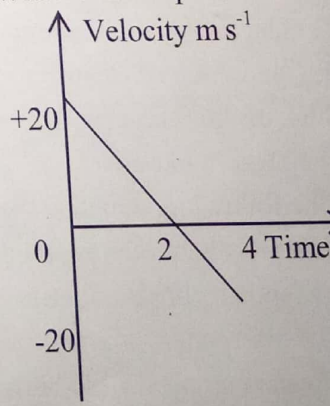
28. The velocity – time graph of an object moved for 4 seconds is illustrated below. What is the displacement of the object during the period of motion?

(1) 40 m

(2) 20 m

(3) 10 m

(4) 0 m



29. An incomplete Punnet square regarding inheritance is given below. Select the option with genotypes suitable for (a), (b), (c) and (d) of the square.

	T	t
T	(a)	(b)
t	(c)	(d)

(1) TT, TT, Tt, Tt
(2) Tt, Tt, TT, TT
(3) TT, Tt, TT, Tt
(4) Tt, TT, TT, Tt

30. Of the following, which option gives the most suitable electronegative values for the elements C, H, O and F?
(1) 4.0, 3.5, 3.0, 2.5 (2) 2.5, 3.0, 3.5, 4.0 (3) 2.5, 3.5, 3.0, 4.0 (4) 4.0, 3.5, 2.5, 3.5

31. A plant bears terminal flowers and it produces large number of pollen. What is the pollinating agent of the flowers of this plant?
(1) Wind (2) Explosive mechanism (3) Water (4) Animals

32. A gas has following properties.
- Density is less than normal air
- Combustible
- Slightly soluble in water.

The gas that best matches those features is,
(1) Oxygen (2) Nitrogen (3) Helium (4) Hydrogen

❖ **Question No. 33 and 34 are based on following description. The solutions P, Q, R and S are prepared by mixing acids and water according to the volumes given in the table below.**

Solution	Volume of acid	Volume of water
P	10 ml	0
Q	8 ml	2 ml
R	6 ml	4 ml
S	4 ml	6 ml

33. If equal pieces of Magnesium are added to the solutions, in which solution does the reaction occur at the highest rate?
(1) P (2) Q (3) R (4) S

34. What kind of reaction is the reaction between Mg and HCl acid?
(1) Combination (2) Decomposition (3) Single displacement (4) Double displacement

35. Several statements are given below.
A – Black surfaces absorb more heat radiation.
B – Polished surfaces absorb more heat radiation.
C – Black surfaces reflect less heat radiation.
D – Polished surfaces reflect less heat radiation.
The true statements out of them are,
(1) Only A & B (2) Only A & C (3) Only B & C (4) Only B & D

36. The vertical height of the mercury column of a mercury barometer at the peak of mountain Everest is 25 cm. What is the atmospheric pressure at that place? (Density of mercury = 13600 kg m^{-3}, Gravitational acceleration=10 m s^{-2})
(1) 3.4 x 10^6 Pa (2) 3.4 x 10^4 Pa (3) 3.4 x 10^2 Pa (4) 3.4 x 10 Pa

37. What is the device that works according to the principle of electromagnetic induction?
(1) Direct current motor (2) Moving coil microphone (3) Electric bell (4) Simple Voltaic cell

38. Of the following, which is an example for sustainable use of resources?
(1) Generation of electricity with fossil fuel
(2) Generation of electricity with wind
(3) Conversion of swamps into farmlands
(4) Production of recycled steel with debris of iron

39. Which of the following options gives a gaseous pollutant and its effect most accurately?
(1) NO_2 – Acid rains (2) CFC – Acid rains (3) PO_4^{3-} - Global warming (4) NO_3^- - Global warming

40. Of the following, which is the instance that releases arsenic to the environment?
(1) Disposing broken filament bulbs to the environment
(2) Disposing broken thermometers to the environment
(3) Disposing used mobile phone batteries to the environment
(4) Disposing used LED bulbs to the environment

දකුණු පළාත් අධ්‍යාපන දෙපාර්තමේන්තුව
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ஆண்டிறுதிப் பரீட்சை - 2023 (2024)/ Final Term Test - 2023 (2024)

ශ්‍රේණිය தரம் Grade	Grade 11	SCIENCE - II	කාලය நேரம் Time	Three Hour

නම பெயர் Name ..... විභාග අංකය சுட்டிலக்கம் Index No. .....

Additional Reading Time – 10min

- ***Write your answers in neat hand writing.***
- Answer the ***four*** questions in **Part A**, in the space provided.
- Of the five questions in **Part B,** answer only **three** questions.
- ***After answering, tie* Part A *and the answer script of* Part B *together and hand over.***
- Use additional reading time to go through the question paper, select the questions you will answer and decide which of them you will prioritize.

Part A – Structured Essay

01. (A) The following table contains five greenhouse gases namely X.Y, Z, P and Q and the main sources of emission of those gases.

Greenhouse Gas	Main Source of Emission
X	Refrigerators and air-conditioners
Y	Bacterial activity on swamps and garbage
Z	Volcanic eruption and combustion of coal
P	Combustion of coal and fuel combustion in automobiles
Q	Fuel combustion in automobiles

i) Of the gases mentioned below, select the gaseous pollutants that suit X, Y and Z.

CFC, SO_2, CH_4

X - ..... Y - ..... Z - .....

ii) (a) Letter P denotes the gas responsible for increasing global warming. Name it.

.....

(b) What is the relationship between increasing global warming and raising the sea level?

.....

.....

iii) Gas Q causes acid rains.

a) What is the gas denoted by Q? .....

b) Of the gases X, Y, Z, select the other gas that causes acid rains. .....

iv) (a) Which is the synthesis process that takes place in green plants using gas P? .....

(b) Which gas is released to the environment during that process? .....

v) Explain how "Reforestation" helps to overcome greenhouse effect.

.....

.....

(B) Several things disposed from school laboratories are given below.

- Broken thermometers
- Broken circuits of LED bulbs
- Burnt LED
- Polythene and plastic
- Pieces of metal
- Broken test tubes
- Paper and plastic
- Burnt filament bulbs

i) Laboratory administration has decided to dispose the above items in five separate bins. One of those bins is labeled as "Electronic Waste". Mention the four ways that the other bins can be labeled.

.....

.....

ii) Select and write down a list of items that can be put into the bin labeled as "Electronic Waste".

.....

.....

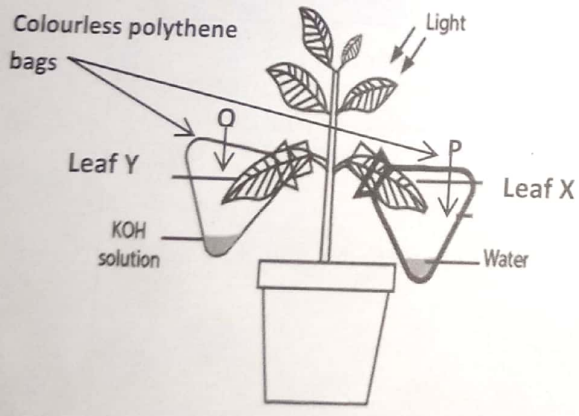
iii) Which is the heavy metal get added to the soil by direct disposal of broken thermometers to the environment?

.....

iv) Write down a benefit of garbage management.

.....

02. (A) Following laboratory set-up is kept at a place where there is plenty of sunlight.



i) After about 4 hours, the composition of air in P and Q spaces are tested. What is the main difference between them? Give the reason for it.

.....

.....

.....

ii) The leaves X and Y are tested for starch after 4 hours. State the leaves that give following observations.

a) The leaf that does not change the colour of iodine solution - .....

b) The leaf that changes the colour of iodine solution - .....

iii) (a) What is the conclusion that can be arrived according to the observation in (ii) above.

.....

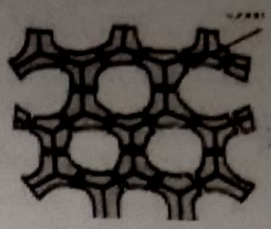
(b) Mention two factors that cannot be identified in the above activity, yet that are necessary for the process tested by the above set-up.

.....

(B) Line diagrams of some living tissues are given as A, B and C below.

A

B



C

i) Write the tissue that matches with (a) and (b) below selecting from A, B, C above.
(a) Plant tissue - .....
(b) Animal tissues - .....

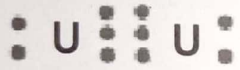
ii) Write down a function of each of the tissues A, B and C.
A - .....
B - .....
C - .....

iii) What is the structural adaptation present in tissue C to perform its function?
.....
.....

iv) Of the tissues A, B and C, which is the tissue found in the lining of the digestive canal?
.....

03. (A) L,U,R, M, Q, W andT are seven elements. The symbols used are not the standard symbols. The Leiws dot diagram of a molecule of U is illustrated at the left side whereas the right side diagram shows how the rest of the elements are positioned in the periodic table.

(Use the onlythe symblos given in your answer)



	II	III	IV	V	VI	VII	VIII
L						R	
M		Q			W	T	

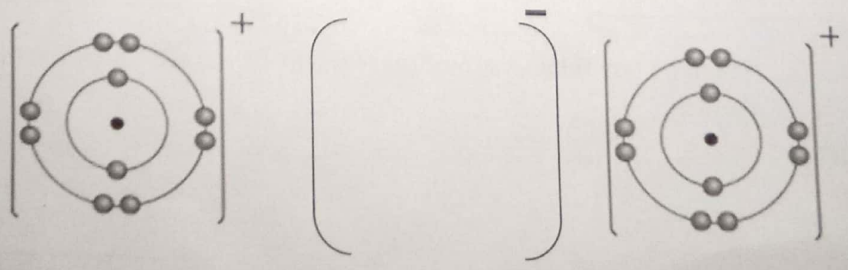
i) (a) Mark the position of U in the periodic table given above.
(b) How many covalent bonds are there in a molecule of U_2? .....

ii) Write down L, M, R in their ascending order of electronegativity. .....

iii) Of R and T, which one has the higher first ionization energy? .....

iv) Select from the above elements and write down which of them forms each of the following types of oxides.
(a) Strongly acidic - .....
(b) Strongly basic - .....
(c) Amphoteric - .....

v) The compound made by the reaction between M and W is illustrated below. It shows how M exists in the compound. Draw how W exists in it.



(B) Three substances are given below.

*Sodium chloride * Graphite * Diamond

i) (a) Of the above substances, select the two substances with atomic lattice.

.....

(b) Write down a difference between structures of atomic lattices of above mentioned substances..

.....

.....

ii) How are sodium and chlorine arranged in the lattice of sodium chloride?

.....

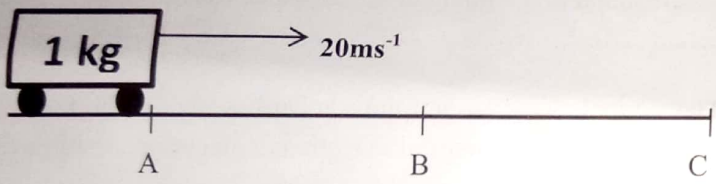
.....

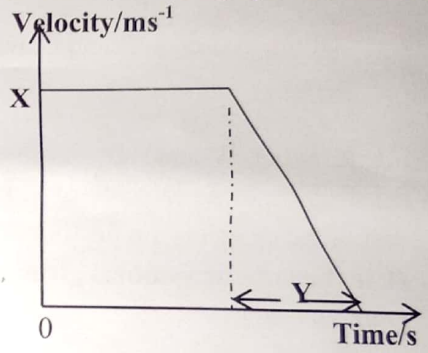
iii) Explain in brief why dry crystals of sodium chloride do not conduct electricity.

.....

.....

04. A B C is a horizontal path where AB = BC. Part AB of the path is smooth whereas part BC of it is having friction. A trolley with the mass of 1kg enters into part AB of the path at A with an initial velocity of $20ms^{-1}$. Then it enters part BC and reaches point C within 5s and stops there. The velocity – time graph related to the motion of the trolley is given below.





i) Mention the values suitable for X and Y in the graph.

X - ..... Y - .....

ii) (a) Calculate the length of part BC of the path.

.....

(b) Calculate the total length of path ABC.

.....

iii) (a) Calculate the deceleration of the trolley in the part BC of the path.

.....

(b) Calculate the frictional force exerted on the trolley in part BC of the path. Neglect the resistance caused by air.

.....

.....

iv) (a) What is the kinetic energy of the trolley when it reaches B?

.....

.....

(b) When the trolley reaches C, its kinetic energy becomes zero. Explain how it happens.

.....

.....

v) Write down the Newton's law related to motion of the trolley in the following parts of the path.

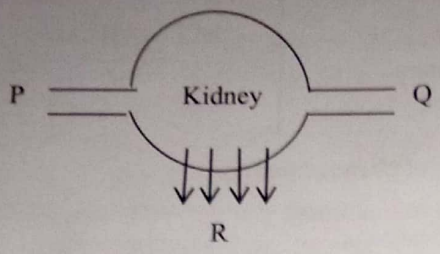
(a) Part AB - .....

(b) Part BC - .....

Part – B

- Of the questions **5, 6, 7, 8** and **9**, answer only ***three*** questions.

05. (A) Nitrogenous excretion takes place in kidneys is illustrated in the rough sketch given below.



P – Blood that enters kidney

Q – Blood that is removed from kidney

R – Mixture of nitrogenous excretory products

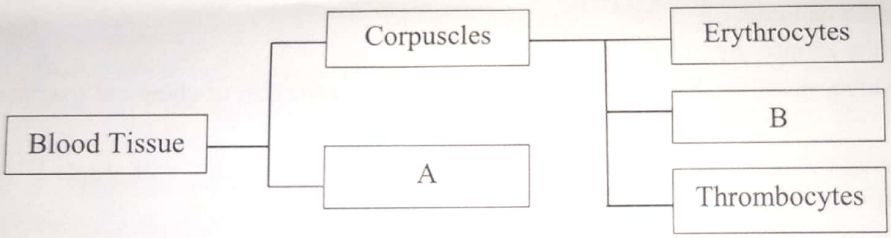
i) (a) In which organ of the urinary system is R stored?
(b) What is the type of muscles present in the wall of that organ?
(c) What is the main nitrogenous excretory product present in R?
(d) Which hormone regulates the amount of water removed with R?

ii) Mention two components present in P but absent in R of a healthy person.

iii) (a) Which structure present in kidney filters blood to form urine?
(b) Write down a structural adaptation present in the aforesaid structure for efficient filtration of blood.

iv) Write down a good habit to follow in order to ensure proper functioning of kidneys.

(B) An incomplete chart on arrangement of blood tissue is given below.



i) Name A and B in the chart.

ii) (a) How much is the percentage of A out of the total volume of blood?
(b) What is the main inorganic compound in A?

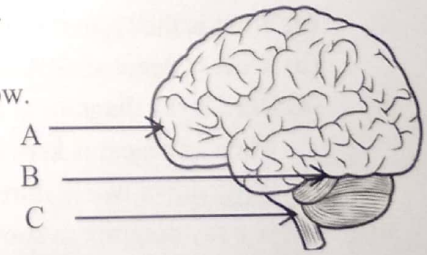
iii) Write down a function each of erythrocytes and B.

iv) Explain why blood tissue is considered as a connective tissue.

(C) Main parts of the human brain are shown in the diagram given below.

i) Name the parts A and C.

ii) Mention a function of each of the parts B and C.



06. (A) Formulae of several chemicals are given below.

- NaOH
- HCl
- CH_3COOH
- NH_4OH
- NaCl

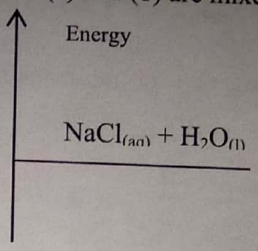
i) Mention a substance suitable for following (a), (b) and (c) selecting from above mentioned chemicals.
(a) Strong acid
(b) Strong base
(c) Neutral

ii) Explain why NH_4OH is considered as a weak base.

iii) Equal volumes of aqueous solutions with equal concentration of above (a) and (b) are mixed together.

(a) Write down the balanced chemical equation for the reaction takes place at that instance.

(b) Heat change associated with the above chemical reaction is incompletely depicted in the energy diagram given beside. Copy down it to your answer script and complete it.



iv) Write down a chemical compound that changes colour of phenolphthalein

(B) Descriptions of three chemical changes are given by X, Y, Z below.

X – Metal A reacts with aqueous solution of copper sulphate.
Y – Metal A does not react with cold water but metal B reacts with cold water.
Z – A simple voltaic cell can be prepared with a copper plate and a plate of A.

i) Select the metals suitable for A and B from the metals Mg, Zn and Na.

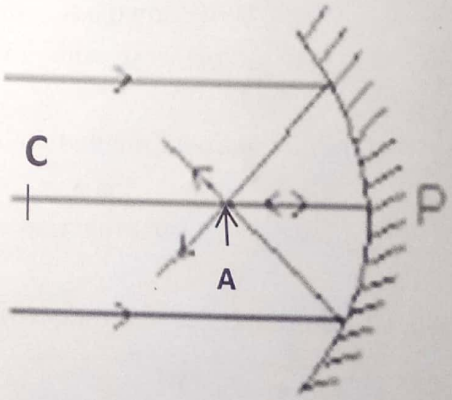
ii) (a) Show in a balanced chemical equation the chemical reaction described in X above.
(b) What type of chemical reaction is it?

iii) In the electrochemical cell mentioned in Z above,
(a) What is the anode?
(b) What is the cathode?
(c) What is the electrolyte?

iv) Mention a safety measure that should be followed in demonstration of chemical reaction stated in Y above.

v) Which element out of A and B is suitable to produce H_2 gas by reacting with dilute HCl?

07 (A) The diagram given beside illustrates how a parallel beam light is reflected by a spherical mirror.



i) (a) What is the type of mirror in the diagram?
(b) What is denoted as A in the diagram?

ii) (a) Draw a ray diagram to show how an image is formed when an object is kept between A and P.
(b) Write down two features of the image.

iii) Draw a ray diagram to show the behaviour of the parallel beam of light when a biconvex lens is kept at the place of the mirror after removing it.

iv) A concave lens is kept in front of a candle flame and it was observed through the lens. Write down two features of the image observed.

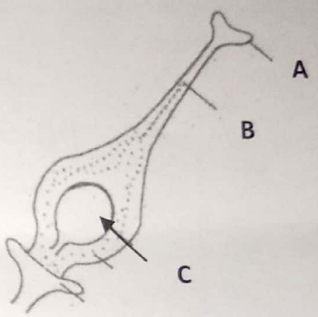
(B)
- P, Q and R are three metal spheres.
- Mass of P and Q are equal.
- Mass of R is twice the mass of P
- All P, Q. R are kept at a height of 20m and released at the same time. (Assume that no energy loss has occurred and $g = 10\ m\ s^{-2}$)

i) How much is the time taken by either P or Q or R to reach the ground?

ii) At the moment of releasing, write down the relationship between potential energy possessed by,
(a) P and Q
(b) P and R

iii) If the mass of R is 2kg,
(a) i) What is the velocity that R strikes the ground?
ii) How much is the kinetic energy of R at that moment?
(b) What is the potential energy of P, when it is 20m above the ground?
(c) How much is the momentum of Q when it strikes the ground?

08. (A) Several facts identified by observing a flower are given below.
- There are five petals and they are white in colour.
- There are 10 stamens.
- Stamens bend away from the stigma
- The gynoecium is illustrated besides.



i) (a) Is the flower described above a monocot flower or dicot flower?
(b) State an observation that verifies your answer for (a) above selecting from above list.

ii) (a) What is the pollinating agent of the above flower?
(b) State an observation that verifies your answer for (a) above selecting from above list.

iii) (a)Write down the adaptation of this flower that supports cross- pollination.
(b) Explain why cross pollination is beneficial to the above plant.

iv) (a) Of the parts A, B, C of the gynoecium, which part becomes the fruit?
(b) What important process should happen in the flower in order to produce fruits?

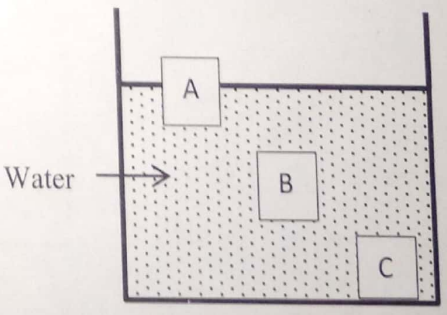
v) Mention a feature of the following parts of the plant that bears the flowers with above described features.
(a) Root system (b) Leaf venation

(B) The diagram given below illustrates how the solids of equal volume stay in still water.

i) Write down A, B and C in the ascending order of their weight.

ii) State how upthrust exerted by water on solids A, B, C changes.

iii) If the weight of B is 20N,
a) How much is the upthrust exerted by water on B?
b) How much is the weight of water displaced by C?



iv) (a) If A is put into coconut oil, will the sunken depth increase or decrease?
(b) Explain the reason.

v) According to the equilibrium of B, illustrate the forces acting on it using a suitable diagram.

vi) The weight of the container and everything in it is 400N. If the surface area of the bottom of the container is $0.02m^2$, how much is the pressure exerted by the container on the surface that it is kept?

09. (A) Four elements among the first 20 elements are denoted by hypothetical symbols X, Y, Z and L. Four usages of them are described in the table below.

Element	Usage
X	Produce ammonia gas by the reaction with nitrogen gas
Y	Use for vulcanizing rubber
Z	Use for production of calcium carbide by reaction with calcium
L	Use for manufacturing lamps that emit yellow light.

i) Mention the correct symbols of elements hypothetically denoted as X, Y, Z and L.

ii) (a) What is the electronic configuration of element Z?

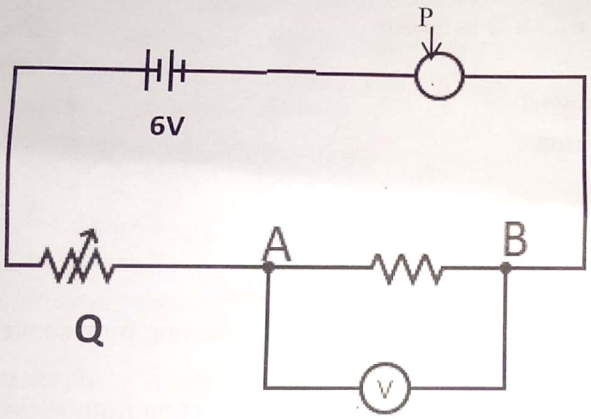
(b) (i) What is the formula of the compound made by chemical combination between Z and X?

(ii) How many covalent bonds are there in a molecule of that compound?

(iii) If the relative molecular mass of that compound is 16, calculate the mas of a molecule of it.

iii) Show in an equation how an atom of element L becomes a cation.

(B) A set –up that is arranged to demonstrate how the current flows through a nichrome coil changes when potential difference across the terminals of the coil is changed is illustrated below.



i) What is the device denoted as P?

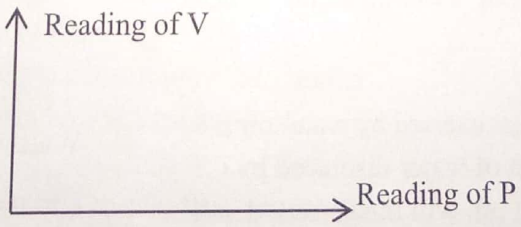
ii) What is the positive terminal out of terminals A and B?

iii) What is the function of the device denoted by Q?

iv) An essential circuit component is not fixed to the circuit. What is it?

v) After connecting the component you mentioned above, readings of V and P in four separate instances are recorded.

a) Copy down the following sketch to your answer script and draw the rough graph to show how the reading of V varies with that of P.



b) What is the physical quantity given by the gradient of the graph?

c) Which law in Physics can be verified by the above experiment?

d) At a certain instance the reading of V is 4.5V and that of P is 0.2A. Accordingly, what is the resistance of the nichrome coil?

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