

**Paper:** Science X Summative Assessment Term I (Shagufta)

**Total marks of the paper:** 90

**Total time of the paper:** 3.5 hrs

**General Instructions:**

1. The question paper comprises of two sections, A and B you are to attempt both the sections.
2. All questions are compulsory.
3. There is no overall choice. However, internal choice has been provided in all the three questions of five marks category. Only one option in such question is to be attempted.
4. All questions to section A and all questions of section B are to be attempted separately.
5. Question numbers 1 to 3 in section A are mark questions. These are to be answered in one word or one sentence.
6. Question numbers 4 to 7 are two marks questions, to be answered in about 30 words.
7. Question number 8 to 19 is three mark questions, to be answered in about 50 words.
8. Question number 20 to 24 are five mark questions, to be answered in about 70 words.
9. Question numbers 25 to 42 in section B are multiple choice questions based on practical skills. Each question is a one mark question. You are choosing one most appropriate response out of the four provided to you.
10. An addition 15 minutes time has been allotted to read this question paper only.

**Questions:**

- 1] Balance the chemical equation: [Marks:1]  
$$\text{Pb}(\text{NO}_3)_2 \xrightarrow{\text{Heat}} \text{PbO}(s) + \text{NO}_2(g) + \text{O}_2(g)$$
- 2] What are the gustatory receptors? [Marks:1]
- 3] What is solar panel? [Marks:1]
- 4] What are the two vital functions of the human kidneys? [Marks:2]
- 5] What happens when a strip of zinc is dipped into copper sulphate solution? Write the balanced chemical equation of the reaction. [Marks:2]

6] Fresh milk has a pH of 6. How do you think the pH will change as it turns into curd? Explain [Marks:2]

7] On what factors does the resistance and resistivity of a conductor depend? Write SI unit of resistance. [Marks:3]

8] Why do we use parallel circuit arrangement for domestic wiring? Give three reasons. [Marks:3]

9] A coil of insulated wire is connected to a galvanometer. What would be seen if a bar magnet with its south pole is brought towards one Face of the coil is:

(a) Moved quickly towards it?

(b) Moved quickly away from it?

(c) Placed near its one face? [Marks:3]

(d) Name the phenomena involved?

(e) North pole of bar magnet is brought towards the same face of the coil.

(f) North pole of bar magnet is kept stationary near the same face of the coil.

10] What do the following transport:

(i) Xylem

(ii) Pulmonary artery [Marks:2]

(i) pulmonary Vein

(ii) Phloem

11] What are the constituents of biogas? Write any two uses of this gas. [Marks:3]

12]

Give reason:

(i) Ionic compounds have high melting point

[Marks:3]

(ii) Ionic compounds are hard crystalline solids.

(iii) Which gas is produced when dilute hydrochloric acid is added to a reactive metal?

13]

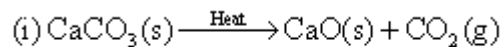
(a) What is redox reaction? When magnesium ribbon burns in the air and forms a white residue, is magnesium oxidized or reduced?

[Marks:3]

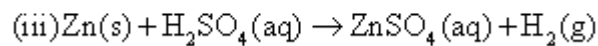
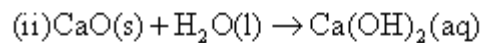
(b) Why should chemical equations be balanced?

14]

Name the type of chemical reaction represented by the following equation and also mention the type endothermic/exothermic:



[Marks:3]



15]

(i) Write the chemical name and formula of "Plaster of Paris".

(ii) How is it prepared?

[Marks:3]

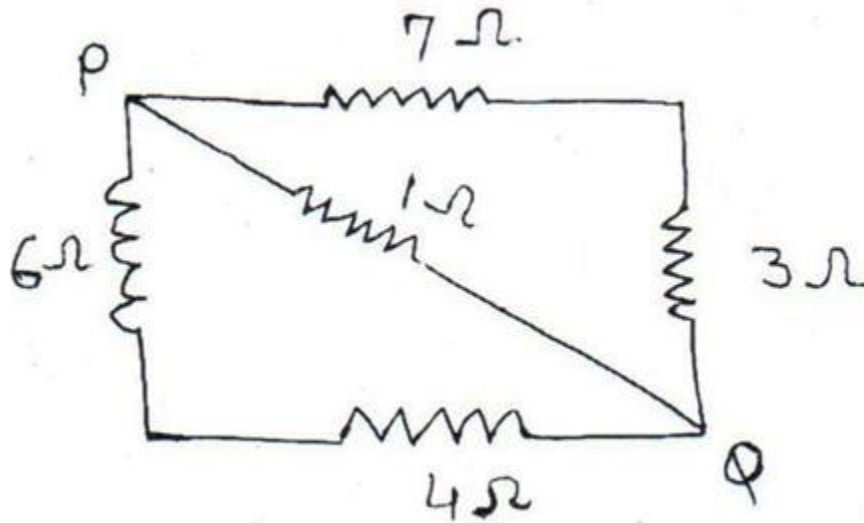
(iii) Write chemical equations of the reaction.

16]

(i) A 400W refrigerator operates for 16 hrs/day, calculate the cost to operate it for 30 days at Rs 3.40 per kWh.

[Marks:3]

(ii) Calculate the effective resistance between P and Q



17] Explain the digestion in stomach. [Marks:3]

18] Mention any three important functions of fore brain. [Marks:3]

19] Draw a labeled diagram of a Neuron. Explain its Functions [Marks:3]

20] What is an endocrine gland? Name any two endocrine glands present in a human body and write hormones secreted by them. [Marks:5]

21] (a) You are provided with three test tubes A, B, C which contain- distilled water, Acidic and basic solutions respectively. If you are given blue litmus paper only, how will you identify the nature of the solutions in three test tubes.

(b) Plaster of Paris should be stored in a moisture-proof container. Explain why? [Marks:5]

OR

(a) Give two important uses of washing soda and baking soda.

(b) Why do acids not show acidic behaviour in the absence of water?

22]

A metal E is stored under kerosene. When a small piece of it is left open in the air, it catches fire. When the product formed is dissolved in water it turns red litmus to blue:

(i) Name the metal E.

(ii) Write the chemical equation for the reaction when it is exposed to air and when the product is dissolved in water.

[Marks:5]

(iii) Explain the process by which the metal is obtained from its molten chloride.

OR

What are alloys? How are they made? Name the constituents and uses of brass, bronze and solder.

23]

What is a solenoid? Draw the patterns of magnetic field lines of a solenoid through which a steady current flows? What does the pattern of field lines inside the solenoid indicate? Write a use of it.

OR

(a) State the rule to determine the direction of a

(i) Magnetic field produced around a straight conductor carrying current

[Marks:5]

(ii) Force experienced by current – carrying straight conductor placed in a magnetic field which is perpendicular to it.

(iii) Current induced in a coil due to its rotation in a magnetic field.

(b) What is the function of an earth wire? Why is it necessary to earth metallic appliances.

24]

Draw a labeled diagram of Human Heart. Draw a table to show the functions of any two chambers of Human Heart.

OR

[Marks:5]

(a) Draw a labeled diagram of Stomata.

Write two Functions of Stomata.

(b) What are the raw materials used during photosynthesis. Write chemical equation for photosynthesis.

25]

The pH value of a solution is in the range of 6 to 8. What is the colour developed when a student adds 3 drops of universal indicator in the solution [Marks:1]

- A. Red
- B. Blue
- C. Orange
- D. Green

26]

The pH values of distilled water, fruit juice and sodium bicarbonate were measured using pH papers. What is the correct decreasing order of pH values [Marks:1]

- A. Water > Fruit juice > Sodium bicarbonate
- B. Fruit juice > Water > Sodium bicarbonate
- C. Water > Sodium bicarbonate > Fruit juice
- D. Sodium bicarbonate > Water > Fruit juice

27]

Four students studied reactions of zinc and sodium Carbonate with dilute hydrochloric acid and dilute sodium hydroxide Solutions and presented their results as follows. The '√' represents evolution of gas whereas 'X' represents absence of any reaction,

	Zn	Na <sub>2</sub> CO <sub>3</sub>		Zn	Na <sub>2</sub> CO <sub>3</sub>		Zn	Na <sub>2</sub> CO <sub>3</sub>		Zn	Na <sub>2</sub> CO <sub>3</sub>
HCl	√	√	HCl	√	X	HCl	X	X	HCl	√	√
NaOH	√	X	NaOH	√	√	H	√	√	NaOH	X	X

[Marks:1]

(A) (B) (C) (D)

- A. B

- B. C
- C. D
- D. A

28]

When dilute HCl reacts with Zinc metal, the gas liberated is?

[Marks:1]

- A. Oxygen
- B. Nitrogen
- C. Chlorine
- D. Hydrogen

29]

If Iron Nails are kept in  $\text{CuSO}_4$  solution for two hours, the colour of the solution will change in to

[Marks:1]

- A. Pink
- B. Light green
- C. Yellow
- D. Red

30]

An element reacts with oxygen to give a compound with a high melting point. This compound is also soluble in water. The element is likely to be:

[Marks:1]

- A. Carbon
- B. Silicon
- C. Iron
- D. Calcium

31]

If four resistors each of  $1\ \Omega$  are connected in parallel. The effective resistance will be:

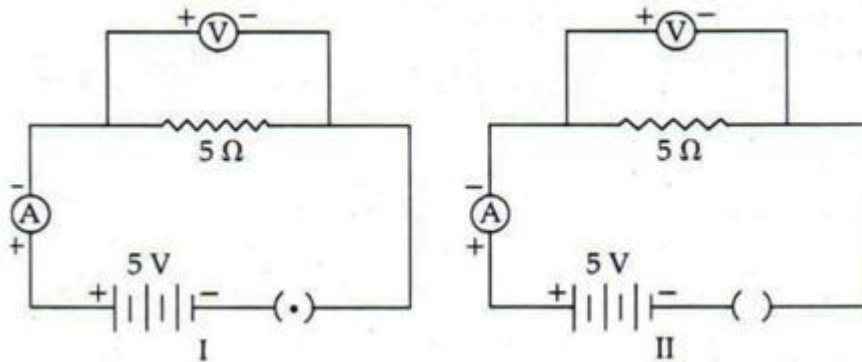
[Marks:1]

- A.  $0.5\ \Omega$
- B.  $4\ \Omega$

- C.  $2\ \Omega$
- D.  $0.25\ \Omega$

32]

For the circuits shown in figures I and II, the ammeter readings would be



[Marks:1]

- A. 0A in Circuit I and 1A in Circuit II
- B. 0A in both Circuits
- C. 1A in both Circuits
- D. 1A in Circuit I and 0A in Circuit II

33]

Three resistors each having same resistance are connected in parallel. Their equivalent resistance is  $1\ \Omega$ . If they are connected in series, their equivalent resistance will be:

[Marks:1]

- A.  $3\ \Omega$
- B.  $1\ \Omega$
- C.  $6\ \Omega$
- D.  $9\ \Omega$

34]

Each of the resistances in the above question will be :

[Marks:1]

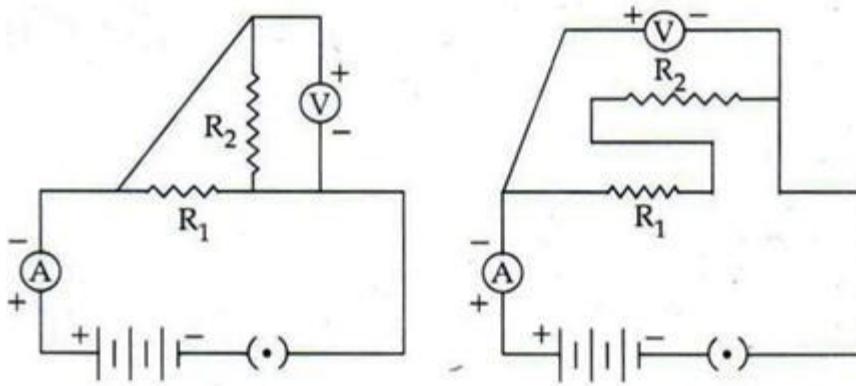
- A.  $2\ \Omega$
- B.  $9\ \Omega$
- C.  $1\ \Omega$



D.  $3\Omega$

35]

The resistors  $R_1$  and  $R_2$  are connected in



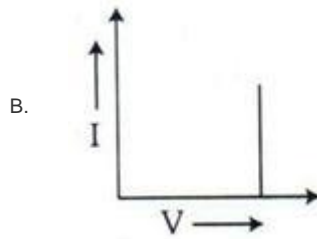
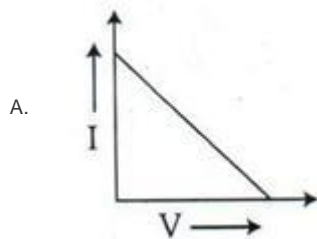
[Marks:1]

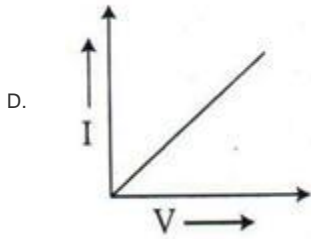
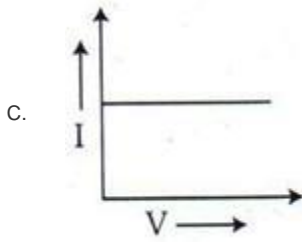
- A. Parallel in both circuits
- B. Series in both circuits
- C. Series in circuit I and in parallel in circuit II
- D. Parallel in circuit I and in series in circuit II

36]

The graph between current (I) and potential difference (V) in the experimental verification of Ohm's Law drawn by four students. Which one is correct?

[Marks:1]





37] Temporary mount of a peel is made in:

[Marks:1]

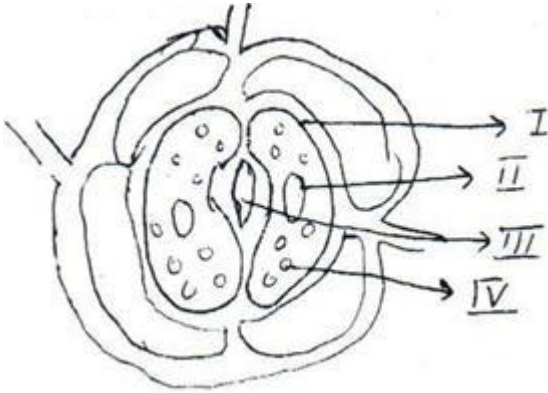
- A. Alcohol
- B. Water
- C. Acetone
- D. Glycerine

38] To remove chlorophyll, the leaf is boiled in to:

[Marks:1]

- A. Water
- B. Iodine solution
- C. None of these
- D. Alcohol

39] In the following sketch of the stomatal apparatus the parts I, II, III and IV were labeled differently by four students. [Marks:1]



The correct labeling out of the following is:

- A. (I) Guard cell  
 (II) Stoma  
 (III) Starchgranule  
 (IV) nucleus
- B. (I) Cytoplasm  
 (II) Chloroplast  
 (III) Stoma  
 (IV) nucleus
- C. (I) Guard cell  
 (II) Nucleus  
 (III) Stoma  
 (IV) Chloroplast

40]

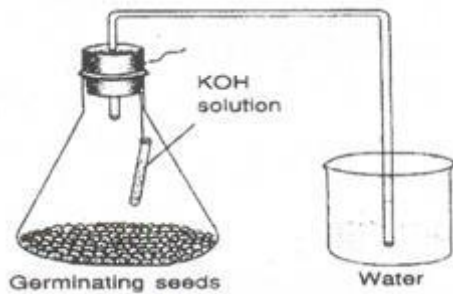
To show that CO<sub>2</sub> is released during respiration we take

[Marks:1]

- A. Dry seeds  
 B. Boiled seeds  
 C. Wet seeds  
 D. Germinating seeds

41]

The function of KOH in the experimental set up to show that CO<sub>2</sub> is released during respiration is:

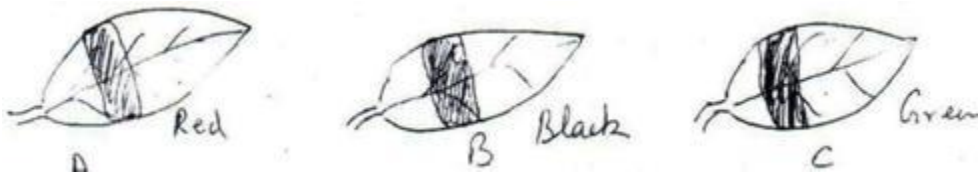


[Marks:1]

- A. To enhance respiration
- B. To release oxygen for respiration
- C. To remove water vapour from the flask
- D. To absorb CO<sub>2</sub> released by germinating seeds

42]

In an experiment on photosynthesis we cover a portion of leaf 'A', of a de-starched potted plant with a red coloured strip, a portion of another leaf B with black and a portion of leaf C with a green strip and then keep the plant in sunlight so that photosynthesis may place.



[Marks:1]

After four hours on performing starch test the result showed no starch formation in the

- A. Covered portion of leaf A
- B. Covered portion of leaf B
- C. Covered portion of leaf C
- D. Covered portion of any of the above

**Paper:** Science X Summative Assessment Term I Sample Paper - 3

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**Solutions:**

1]



2]

The receptors present in the specific regions of the tongue are called gustatory receptors.

3]

A large number solar cell combined in an arrangement.

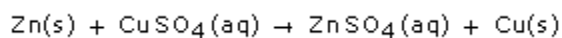
4]

(i) Human kidney performs the excretion by cleaning the blood of metabolic wastes.

(ii) It performs the function of osmoregulation by maintaining normal levels of water and mineral ions in the body fluids.

5]

'Zn' being more reactive displaces 'Cu' from  $\text{CuSO}_4$  solution  $\text{CuSO}_4$  solution becomes Colourless.



(blue) (colourless)

6]

The pH of milk decreases from '6' as it turns into curd. That is curd is more acidic than milk.

7]

Resistance depends upon:

- (i) Length of the conductor
- (ii) Area of cross section
- (iii) Material of conductor

Resistivity depends on:

- (i) Material
- (ii) Temperature

SI Unit of resistance is 'Ohm' or  $\Omega$

8]

- (i) Each appliance have equal potential differenc
- (ii) Each appliance have a separate switch to on/off
- (iii) Each appliances can be operated on different current

9]

- (a) Momentary deflection in the galvanometer to one side.
- (b) Momentary deflection in the galvanometer now in opposite direction.
- (c) No deflection in the galvanometer.
- (d) Phenomenon involved is electromagnetic induction.
- (e) Momentary deflection in the galvanometer now in opposite to the direction of the first case.
- (f) No deflection in the galvanometer.

10]

- (i) Xylem – water and minerals in plants
  - (ii) Pulmonary Artery – Deoxygenated blood from heart to lungs.
  - (iii) Pulmonary Vein – Oxygenated blood from lungs to heart.
- Phloem – Synthesised food in plants

11]

- 1) Methane or CH<sub>4</sub>
- 2) Hydrogen
- 3) Hydrogen sulphide
- 4) CO<sub>2</sub>

Uses Any two:

. For the production of electricity ii. As a fuel to produce heat and light. iii. Biogas generation is an effective method of the disposal of bio wastes like, animal wastes and sewage.

12]

(i) Ionic Compounds which are held together by strong ionic bonds so high amount of energy is required to break these bonds.

(ii) Ionic compounds are very hard solids due to strong force of attraction between positive and negative ions.

(iii) Hydrogen gas is evolved when dilute hydrochloric acid is added to a reactive metal.

13]

(a) Chemical reaction in which one reactant gets oxidized while the other get reduced is known as a redox reaction.

When Magnesium ribbon burns in air, magnesium is oxidized and the white residue formed is of magnesium oxide.

(b) Chemical equations must always be balanced to follow the law of conservation of mass, according to which "Mass can neither be created nor destroyed in a chemical reaction."

14]

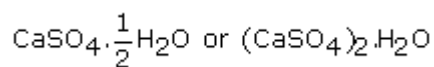
(i) This is an example of decomposition reaction and it is endothermic in nature.

(ii) This is an example of combination reaction and it is also a type of endothermic reaction.

(iii) This is an example of displacement reaction and it is exothermic reaction.

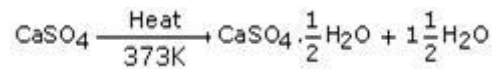
15]

(i) The chemical name of 'Plaster of Paris' is 'Calcium sulphate Hemi hydrate'



(ii) It is prepared on heating gypsum at 373 K

(iii)



16]

$$(i) \text{ Energy consumed} = \frac{\text{Watt} \times \text{hours} \times \text{day}}{1000}$$

$$\text{Putting value} = \frac{400 \times 16 \times 30}{1000}$$

$$\text{Calculation} = 192 \text{ kWh (unit)}$$

$$\begin{aligned} \text{Cost of Energy consumed} &= \text{Rate} \times \text{kWh} \\ &= 3.40 \times 192 \end{aligned}$$

$$= \text{Rs. } 652.80$$

$$(ii) \text{ In series } R_2 = 7 \Omega + 3 \Omega = 10 \Omega$$

$$R_3 = 6 \Omega + 4 \Omega = 10 \Omega$$

In Parallal

$$\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$$

$$= \frac{1}{1} + \frac{1}{10} + \frac{1}{10}$$

$$= \frac{10 + 1 + 1}{10} = \frac{12}{10} = \frac{6}{5}$$

$$R = \frac{5}{6} \Omega$$

OR

$$\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2(a+b)} + \frac{1}{R_3(c+d)}$$

$$= \frac{1}{1} + \frac{1}{7+3} + \frac{1}{6+4}$$

$$= 1 + \frac{1}{10} + \frac{1}{10} = \frac{6}{5}$$

$$R = \frac{5}{6} \Omega$$

17]

The gastric glands in the stomach secrete:



(i) HCl – It kills the bacteria ingested with food and makes the medium of food acidic so as to facilitate the action of the enzyme pepsin.

(ii) Pepsin – It helps to digest proteins.

(iii) Mucus – It protects the inner lining of the stomach from the action of HCl

18]

The functions of fore brain are:

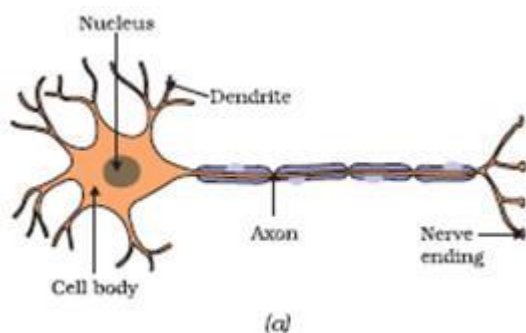
(i) It has sensory area where information is received from sense organs.

(ii) It has motor area where impulses are sent to muscles or effector organs.

(iii) It has centres for visual reception, touch, smell, temperature and muscular activities.

19]

(a) Diagram of Neuron:



Functions:

(i) To carry information from receptors to brain and spinal cord.

(ii) To transfer response from brain and spinal cord to effectors.

20]

(a) The glands which does not have duct and secretes it's product directly into blood stream is called an endocrine gland.

Two glands are: Thyroid and pancreas.

Thyroid secretes thyroxin and pancreas secretes insulin.

21]

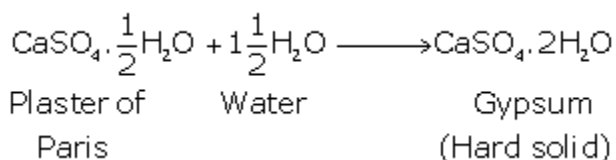
(a)

(i) Test the three solutions with blue litmus paper, the solution that changes I blue litmus into red is Acidic solution.

(ii) Test the remaining two solutions with the red litmus. One solution will change it again to blue – then that solution is a basic solution.

(iii) Remaining third solution is distilled water which being neutral does not cause any colour change of either the blue or red litmus paper.

(b) Plaster of Paris should be stored in a moisture-proof container because Plaster of Paris, a powdery mass absorbs water (moisture) to form a hard solid known as gypsum.



OR

(a) Two important uses of washing soda and baking soda are as follows: Washing soda:

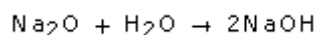
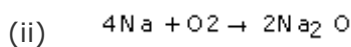
(i) It is used in glass, soap, and paper industries. (ii) It is used to remove permanent hardness of water.

Baking soda:- (i) It is used as baking powder. Baking powder is a mixture of baking soda and a mild acid known as tartaric acid. When it is heated or mixed in water, it releases CO<sub>2</sub> gas that makes bread or cake fluffy. (ii) It is used in soda-acid fire extinguishers.

(b) Acids dissociate in the presence of water to give free hydrogen ions. It is the hydrogen ions that are responsible for the acidic behaviour.

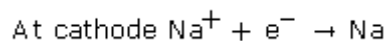
22]

(i) Metal – sodium

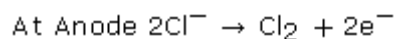


(ii) Electrolysis of molten chloride (NaCl)

At cathode ((-ve) charged electrode) → Na is deposited.



At Anode ((+ve) electrode) → Cl<sub>2</sub> is liberated.

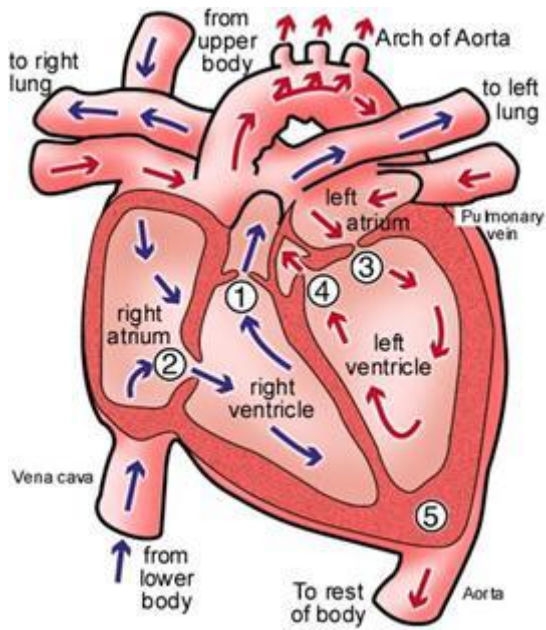


OR



24]

(a)



(b) Functions of chambers of human heart:

Left Atrium – Receive oxygenated blood from pulmonary vein

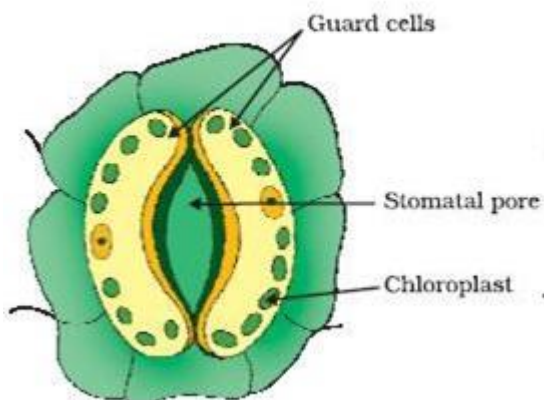
Right Atrium – Receive deoxygenated blood from vena cava

Left Ventricle – Pumps oxygenated blood to all parts of body

Right Ventricle – Pumps deoxygenated blood to lungs. (Any two)

OR

(a) Diagram of Stomata:

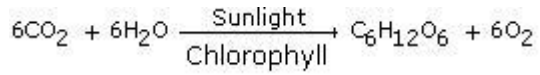


Functions

(a) Exchange of gases

(b) Transpiration

Raw materials for photosynthesis are CO<sub>2</sub>, H<sub>2</sub>O



25]

Green

26]

Sodium bicarbonate > Water > Fruit juice

27]

A

28]

Hydrogen

29]

Red

30]

Calcium

31]

0.25 Ω

32]

0A in Circuit I and 1A in Circuit II

33]

9 Ω

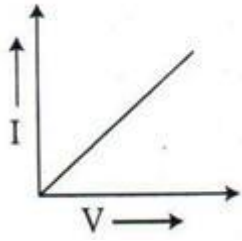
34]

3 Ω

35]

Parallel in circuit I and in series in circuit II

36]



37]

Glycerine

38]

Alcohol

39]

(I) Guard cell

(II) Nucleus

(III) Stoma

(IV) Chloroplast

40]

Germinating seeds

41]

To absorb  $\text{CO}_2$  released by germinating seeds

42]

Covered portion of any of the above