

CBSE Board
Class X Science
Term 1 Sample
Paper - 2

Time: 3 hrs

Total Marks: 90

General Instructions:

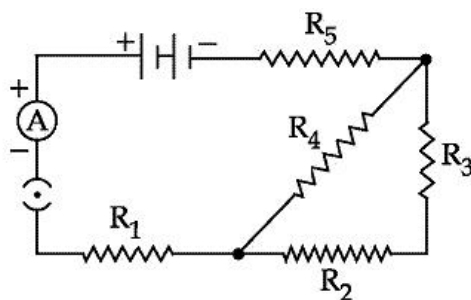
1. The question paper comprises of **two sections, A and B**. You are to attempt both the sections.
 2. There is no overall choice. However, internal choice has been provided in all the five questions of five marks category. Only one option in such question is to be attempted
 3. All the questions of **Section-A** and **Section-B** are to be attempted separately.
 4. Question numbers **1 to 3** in **Section - A** are **one mark** questions. These are to be answered in one word or one sentence.
 5. Question numbers **4 to 7** in **section - A** are **two marks** questions, to be answered in about **30 words each**.
 6. Question number **8 to 19** in **section-A** are **three marks** questions, to be answered in about **50 words**.
 7. Question number **20 to 24** in **section-A** are **five marks** questions, to be answered in about **70 words**.
 8. 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 to select one most appropriate response out of the four provided to you.
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SECTION-A

Attempt all questions from this section.

- Q 1. Define the term rancidity. (1)
- Q 2. What is meant by the statement that the potential difference between two points is 1 volt? (1)
- Q 3. List two practical uses of biogas in rural areas. (1)
- Q 4. Burning of candle is accompanied by both physical and chemical change. Mention the observations which help to deduce that both physical and chemical changes are taking place. (2)

Q 5. Consider the following circuit diagram. If $R_1 = R_2 = R_3 = R_4 = R_5 = 3 \Omega$, find the equivalent resistance of the circuit. (2)



Q 6. Identify the poles of the magnet in the given figure (1) and (2) (2)

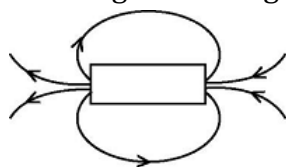


Figure - 1



Figure - 2

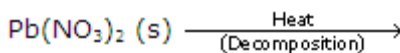
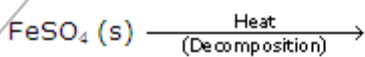
Q 7. What are villi? What is their function? (2)

Q 8. (3)

(a) What happens when copper is burned in air? Give the equation. What type of a reaction is it?

(b) What happens when hydrogen gas is passed over the product obtained in step above? Give the equation also.

Q 9. Complete the following reactions and write the balanced equations: (3)



Q 10. (3)

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

(ii) How is it prepared?

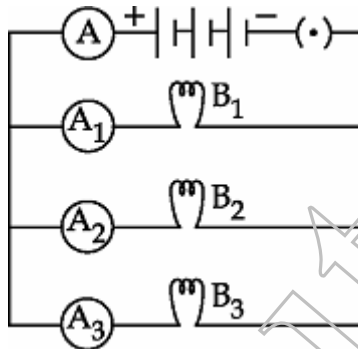
(iii) Write chemical equations of the reaction.

Q 11. You are provided with three test tubes A, B, C which contain distilled water, Acidic and basic solutions. If you are given blue litmus paper only, how will you identify the nature of the solutions in three test tubes? (3)

Q 12. Give reasons: (3)

- (i) Ionic compounds have high melting points.
- (ii) Ionic compounds are hard crystalline solids.
- (iii) Ionic compounds dissolve in water.

Q 13. Study the circuit shown in which three identical bulbs B_1 , B_2 and B_3 are connected in parallel with a battery of 4.5 V. (3)



- (i) What will happen to the glow of other two bulbs if the bulb B_3 gets fused?
- (ii) If the wattage of each bulb is 1.5 W, how much reading will the ammeter A show when all the three bulb glow simultaneously.
- (iii) Find the total resistance of the circuit.

Q 14. Dams are constructed to generate electricity from water stored at a height. People living in neighbouring areas protested against it to save the flora and fauna. (3)

- (i) What type of energy is possessed by the stored water?
- (ii) What is the energy transformation that takes place in hydroelectric power plant?
- (iii) What values of the people are shown by this act? (Any two)

Q 15. Name the physical quantity which is (i) same (ii) different, in all the bulbs when three bulbs of: (3)

- (a) same wattage are connected in series
- (b) same wattage are connected in parallel
- (c) different wattage are connected in series
- (d) different wattage are connected in parallel

Q 16. How will the magnetic field produced at a point due to a current carrying circular coil change if we: (3)

- (a) increase the current flowing through the coil?
- (b) reverse the direction of current through the coil?
- (c) increase the number of turns in the coil?

Q 17. . Give a reason to explain why: (3)

- (i) Adrenaline helps in dealing emergency situations?
- (ii) Secretions of growth hormone should be specific in the human body?
- (iii) Some patients of diabetes are treated by giving injections of insulin

Q 18. (3)

- (a)** The components of an electric circuit are 0.5 m long nichrome wire XY, an ammeter, a voltmeter; four cells of 1.5 V each, rheostat and a plug key. Draw a diagram of the circuit to study the relation between potential difference across the terminals X and Y of the wire and current flowing through it.
- (b)** State the law that relates potential difference across a conductor with the current flowing through it.

Q 19. Why is it not possible to make use of solar cells to meet all our energy needs? State at least three reasons to support your answer. (3)

Q 20. (5)

- (a)** Write the chemical name and formula of washing soda. How is it prepared? Write the chemical equation of the reaction.
- (b)** Why does distilled water not conduct electricity, whereas rain water does?

Or

(a) Five solutions A, B, C, D and E when tested with universal indicator showed pH as 4, 1, 11, 7 and 9 respectively. Which solution is:

- (i) Neutral?
- (ii) Strongly alkaline?
- (iii) Strongly acidic?
- (iv) Weakly acidic?
- (v) Weakly alkaline?

Arrange the pH in increasing order of hydrogen-ion concentration.

(b) Equal lengths of magnesium ribbons are taken in test tubes A and B. Hydrochloric acid (HCl) is added to test tube A, while acetic acid (CH_3COOH) is added to test tube B. In which test tube will the fizzing occur more vigorously and why?

Q 21.

(5)

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.
- (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.

Q 22. 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. (5)

Or

(a) State the rule to determine the direction of

- (i) Magnetic field produced around a straight conductor carrying current
- (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) Name two safety measures commonly used in domestic electric circuits and appliances.

Q 23.

(5)

(a) Draw diagram of human alimentary canal and label the following:

- (i) Part in which starch digestion starts.
- (ii) Part in which bile is stored.
- (iii) Part in which nutrients are absorbed.
- (iv) Part in which water is absorbed.

(b) Mention the role of hydrochloric acid in the stomach.

(c) What function is served by the following:

- (i) Gastric sphincter
- (ii) Anal sphincter

Or

(a) Draw a neat diagram of excretory system of human beings and label the following:

- (i) Kidney
- (ii) Ureter
- (iii) Urinary Bladder
- (iv) Urethra

(b) How is urine produced?

(c) Name two excretory products other than O_2 and CO_2 in plants.

Q 24.

(5)

(a)

- (i) Why should we use iodized salt in our diet?
- (ii) If iodine is insufficient in one's diet, what might be the deficiency disease?

(b) How does feedback mechanism regulate the hormone secretion?

Or

(a)

- (i) Which plant hormone is present in greater concentration in the areas of rapid cell division?
- (ii) Give one example of a plant growth promoter and a plant growth inhibitor

(b) What is the role of plant hormone 'cytokinins'?

SECTION B

Q25. Which of the statements about the reaction below are incorrect? (1)



- (i) Lead is getting reduced.
 - (ii) Carbon dioxide is getting oxidised.
 - (iii) Carbon is getting oxidised.
 - (iv) Lead oxide is getting reduced.
- A. (i) and (ii)
B. (i) and (iii)
C. (i), (ii) and (iii)
D. All

Q26. The colour of the pH paper strip turned red when it was dipped into a sample. The sample could be: (1)

- A. Dilute sodium bicarbonate
- B. Tap water
- C. Dilute sodium hydroxide
- D. Dilute hydrochloric acid

Q27. Which one of the following cannot be used to find the pH of a solution? (1)

- A. pH paper
- B. Litmus paper
- C. Universal indicator
- D. Standard pH value chart

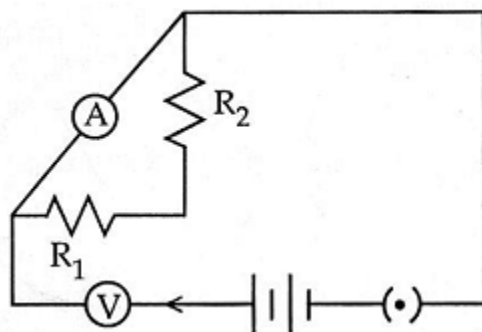
Q 28. Dil. HCl is added to solid sodium carbonate. It is observed that: (1)

- A. No change takes place
- B. A loud sound is produced immediately
- C. Immediately a brisk effervescence is produced
- D. The solution turns blue black

Q29. Reddish brown deposit observed on iron nails, when these are kept in aqueous solution of CuSO_4 is that of: (1)

- A. Cu_2O
- B. CuO
- C. Cu
- D. CuS

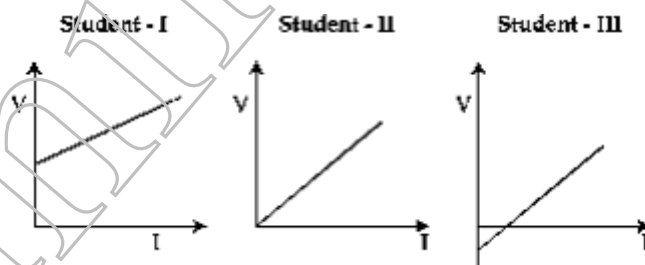
Q30. For carrying out the experiment, on finding the equivalent resistance of two resistors connected in series, a student sets up the circuit as shown. On further verification he finds out that the circuit has one or more of the following faults. (1)



- (i) The resistors R_1 and R_2 have not been correctly connected in series.
 - (ii) The voltmeter has not been correctly connected in the circuit.
 - (iii) The ammeter has not been correctly connected in the circuit.
- Out of these three, the actual fault in the circuit is/are.

- A. Both (i) and (ii)
- B. Both (ii) and (iii)
- C. Only (i)
- D. Only (ii)

Q 31. In the experiment on studying the dependence of current I on the potential difference V , three students plotted the following graphs between V and I . The graph that is likely to be correct is that of: (1)



- A. Student I only
- B. Student II only
- C. Student III only
- D. All the three students

Q 32. For the circuits shown in figure-1 and figure-2 the ammeter reading would be : (1)

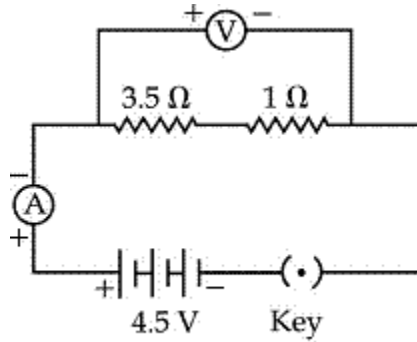


Fig. 1

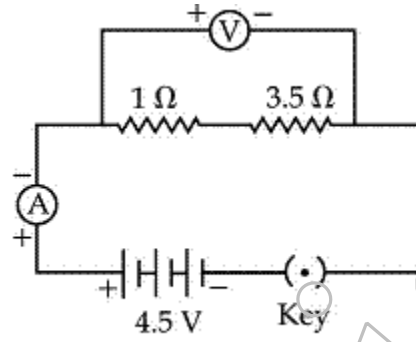
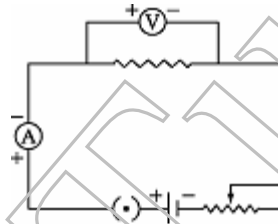


Fig. 2

- A. 1.0A in figure 1 and 0.0A in figure 2
- B. 0.0A in both
- C. 1.0A in both
- D. 1.0A in figure 1 and 1.0A in figure 2

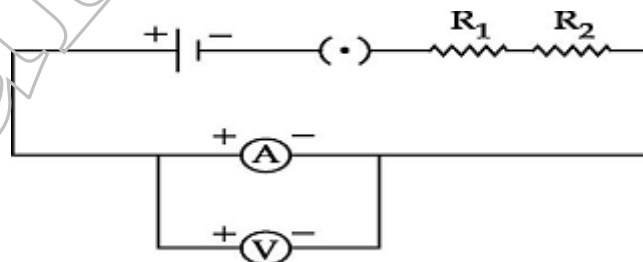
Q 33. The two circuit components shown connected in parallel in the following circuit are :(1)



- A. Rheostat and voltmeter
- B. Voltmeter and resistor
- C. Voltmeter and ammeter
- D. Ammeter and resistor

Q 34. To determine the equivalent resistance of a series combination of two resistors R_1 and R_2 , a student arranges the following set up. (1)

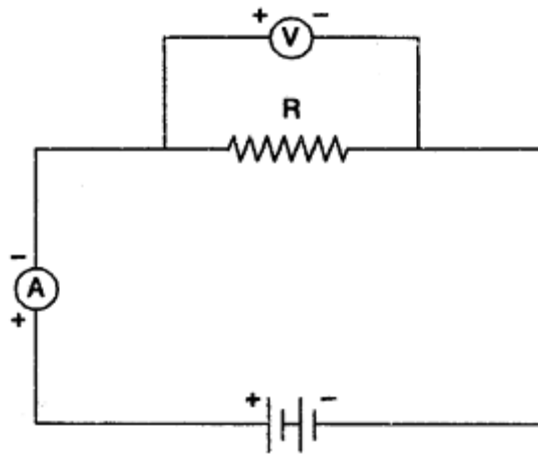
Which one of the following statements will be true for this circuit? It gives :



- A. Incorrect reading for both current I and potential difference V .
- B. Correct reading for current I , but incorrect reading for potential difference V .
- C. Correct reading for potential difference V but incorrect reading for current I .
- D. Correct readings for both V and I .

Q 35.

(1)



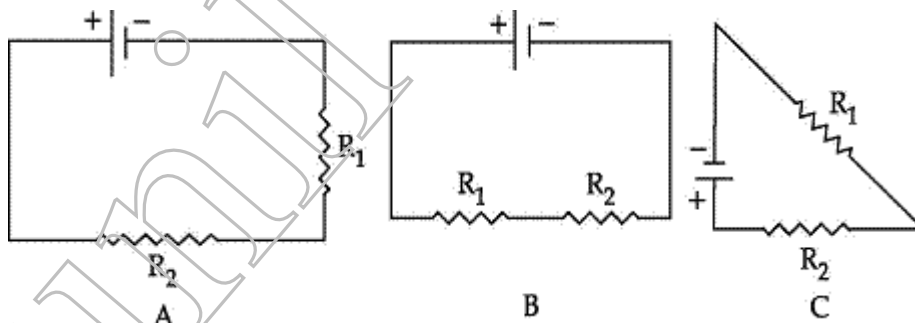
Which one of the following is correct about the current I through the circuit and potential difference V across the resistor R , if one increases the number of cells in the given circuit?

- A. V will increase, I will decrease
- B. I will increase, V will decrease
- C. Both I and V will increase
- D. Only V will increase and I will remain unchanged.

Q 36.

(1)

Two resistances R_1 and R_2 are to be connected in series combination. Out of the following the correct combination is shown in :



- A. Only A
- B. Only B
- C. Only C
- D. All of them A, B and C

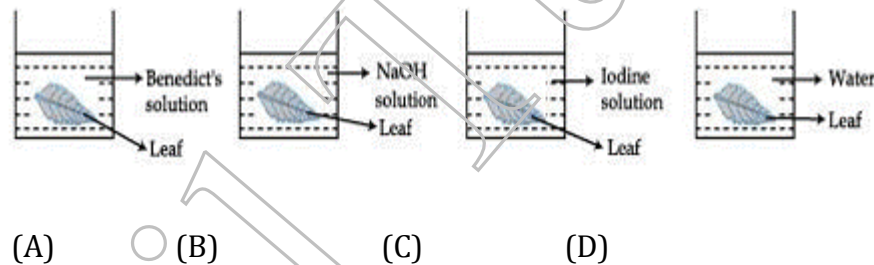
Q 37. A well stained leaf peel preparation when focused under high power of the microscope would show: (1)

- A. Epidermal cells, stomata and guard cells, each with one nucleus and many chloroplasts.
- B. Epidermal cells, stomata and guard cells, each with many nuclei but one chloroplast.
- C. Stomata and guard cells without nuclei or chloroplast.
- D. Stomata but no guard cells or epidermal cells.

Q 38. Out of the following which one is needed to demonstrate that 'Light is essential for photosynthesis'? (1)

- A. A hydrilla twig kept inside a beaker containing water
- B. A variegated leaf
- C. A healthy destarched potted plant
- D. A germinating plant

Q 39. Figures A, B, C and D show leaves that has been boiled in alcohol, placed in four beakers containing liquids as labelled. (1)



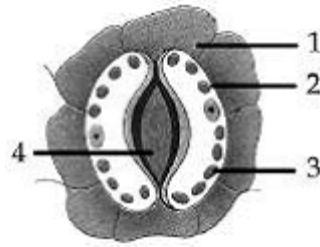
In which one of the above a positive test for presence of starch would be obtained?

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

Q 40. A temporary slide of leaf peel is mounted in : (1)

- A. Iodine
- B. Glycerine
- C. Safranin
- D. Methylene blue

Q 41. The following diagram shows the stomatal apparatus as observed in the mounted slide. Its parts have been labelled with numbers. Which number denotes chloroplast? (1)



- A. 1
- B. 2
- C. 3
- D. 4

Q 42. A student set up the apparatus for the experiment to show that CO_2 is released during respiration. After 2 hours, he would observe that: (1)

- A. KOH turns milky
- B. Water level rises in the bent tube in the beaker
- C. Water level decreases in the bent tube in the beaker
- D. Water turns turbid in the beaker

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Solution

Time: 3 hrs

Total Marks: 90

SECTION-A

- 1. Ans.** The condition produced due to oxidation of fats and oils present in foods by virtue of which foods develop unpleasant smell and taste is called rancidity.
- 2. Ans.** It means that one joule of work is done to move a charge of one coulomb from one point to another.
- 3. Ans.** Two practical uses of biogas in rural areas are:
 - (i)** As a fuel in chulhas
 - (ii)** For lighting homes
- 4. Ans.** In a physical change, there is only change of state of substance and no new substance is formed. Thus, melting of wax is a physical change because solid wax changes to liquid wax and no new substance is formed.

In a chemical change, a new substance is formed during a change. Thus, burning of wax is chemical change because wax (made of hydrocarbons) burns to produce carbon dioxide and water vapour i.e. new products are formed.

- 5. Ans.** Let the resistance of the combination of R_2 , R_3 and R_4 be x then

$$\frac{1}{x} = \frac{1}{R_2 + R_3} + \frac{1}{R_4} = \frac{1}{6\Omega} + \frac{1}{3\Omega}$$
$$\Rightarrow x = 2\Omega$$

Equivalent resistance of the circuit = $R_1 + x + R_5 = 3\Omega + 2\Omega + 3\Omega = 8\Omega$

6. Ans.

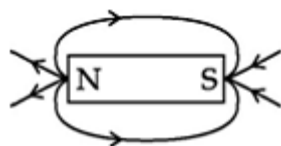


Fig. (1)

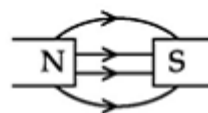
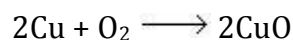


Fig. (2)

7. **Ans.** Villi are finger like projections present in the inner walls of the small intestine. It increases the surface area for absorption.

8. **Ans.**

(a) When copper metal is heated in air, it gets oxidised to form copper oxide.

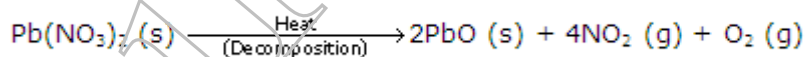
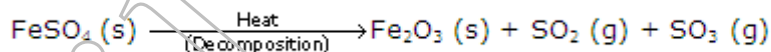


It is an oxidation reaction since copper is oxidised to copper oxide.

(b) When hydrogen gas is passed over heated copper oxide, then the black copper oxide is reduced and brown copper metal is obtained.

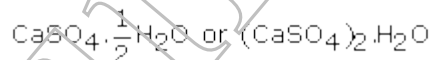


9. **Ans.**



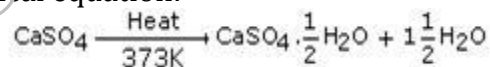
10. **Ans.**

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



(ii) It is prepared by heating gypsum to a temperature of 100°C (373 K) in a kiln.

(iii) Chemical equation:



11.Ans.

- (i) Solution A: Test the solution with blue litmus paper. There will be no change in the color of blue litmus paper.
- (ii) Solution B: Test the solution with blue litmus paper. The color of blue litmus paper will change to red.
- (iii) Solution C: Test the solution with a piece of red litmus paper (formed in step
- (iv) The color of red litmus paper will change back to blue.
Again test solution A with a piece of red litmus paper, there will be no change in the colour.
Hence, solution A (distilled water) is neutral since it does not bring out any change in the color of litmus paper.

Solution B is acidic since it turns blue litmus paper red.
Solution C is basic since it turns red litmus blue.

12.Ans.

- (i) Ionic compounds have high melting points because there is a strong electrostatic force of attraction between the oppositely charged ions of ionic compounds and hence a large amount of energy is required to break this strong bonding force between ions.
- (ii) Ionic compounds are very hard solids due to strong force of attraction between the oppositely charged +ve and -ve ions.
- (iii) Ionic compounds dissolve in water because water has a high dielectric constant due to which it weakens the attraction between the ions.

13.Ans.

- (i) If the bulb B₃ gets fused, other two bulbs will glow with same brightness.
- (ii) When the bulbs are in parallel, wattage will be added (4.5 W) and the ammeter reading would be $\frac{4.5W}{4.5V} = 1.0$ ampere
- (iii) Since ammeter reading is 1.0 ampere, resistance of the combination is $\frac{4.5V}{1.0A} = 4.5\Omega$

14.Ans.

- (i) Potential energy
- (ii) Potential energy (of stored water) into electrical energy
- (iii) People are sensitive to environment, have compassion for animals, proactive and responsible.

15. Ans.

(a) Same wattage are connected in series:

1. Current and voltage are same
2. Nothing is different

(b) Same wattage is connected in parallel:

1. Current and voltage are same
2. Nothing is different

(c) Different wattage is connected in series:

- (i) Current is same
- (ii) Voltage is different

(d) Different wattage is connected in parallel:

- (i) Voltage is same
- (ii) Current is different

16. Ans.

(a) On increasing the current flowing through the coil, the field will increase.

(b) On reversing the direction of current through the coil, the direction of field will reverse.

(c) On increasing the number of turns in the coil, the field will increase.

17. Ans.

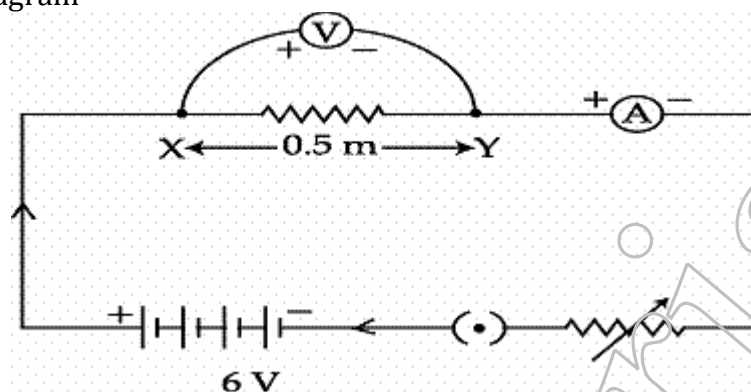
(a) Adrenaline increases the heart beat and breathing rate which results in the supply of more oxygen to muscles. It reduces the blood to the digestive system and skin; as a result the blood further reaches the skeletal muscles. All these responses together prepare the body to deal with the emergency situations.

(b) If growth hormone is secreted in excess during childhood, then it leads to gigantism while the less secretion of this hormone during childhood causes dwarfism.

(c) The patients suffering from diabetes have high blood sugar level as insulin is not secreted in sufficient amount by the pancreas which lowers the blood sugar level. Therefore, to regulate the blood sugar level, insulin hormone is injected in such patients.

18. Ans.

(a) Circuit Diagram



(b) Ohm's law - The potential difference, V , across ends of a given metallic wire in an electric circuit is directly proportional to the current flowing through it, provided its temperature remains the same

19. Ans. It is not possible to make use of solar cells to meet all our energy needs due to

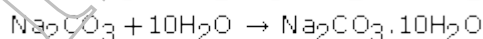
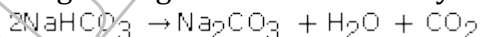
- i. the limited availability of special grade silicon to make solar cells.
- ii. the unavailability of efficient system to store electrical energy generated by solar panels.
- iii. the high cost involved in the process of making solar cells.

20. Ans.

(a) The chemical name of washing soda is Sodium carbonate Decahydrate.

The formula is $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$

It is obtained by heating baking Soda and then recrystallization.



(b) Distilled water is a pure form of water and is devoid of any ionic species. Therefore, it does not conduct electricity. Rain water, being an impure form of water, contains many ionic species such as acids and therefore it conducts electricity.

Or

(a)

- (i) Neutral- Solution D with pH 7 (ii) Strongly alkaline- Solution C with pH 11
(iii) Strongly acidic- Solution B with pH 1 (iv) Weakly acidic- Solution A with pH 4 (v) Weakly alkaline- Solution E with pH 9

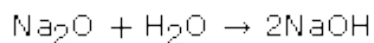
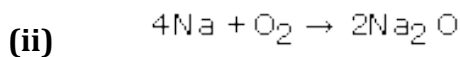
The pH can be arranged in the increasing order of the concentration of hydrogen ions as: $11 < 9 < 7 < 4 < 1$

(b) The fizzing will occur strongly in test tube A, in which hydrochloric acid (HCl) is added.

This is because HCl is a stronger acid than CH_3COOH and therefore produces hydrogen gas at a faster speed due to which fizzing occurs.

21. Ans

(i) Metal – sodium

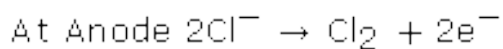
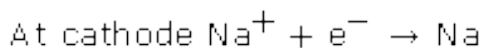


(iii) Electrolysis of molten chloride (NaCl) is the process.

At cathode (–vely charged electrode) \rightarrow Na is deposited.

At Anode (+vely charged electrode) \rightarrow Cl_2 is liberated.

i.e. we can write:



OR

Alloys are homogeneous mixtures of two or more metals or a metal and a non metal.

They can be prepared in the following ways:

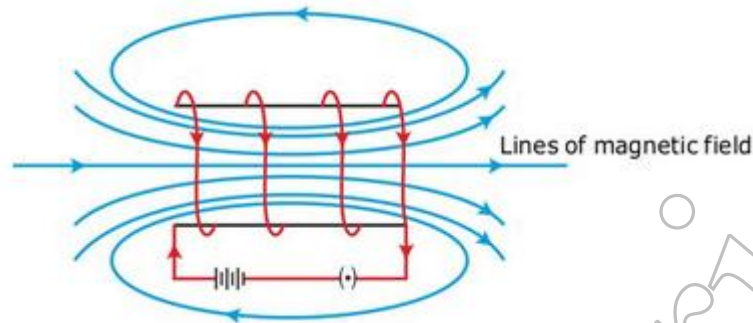
(i) By melting the primary metal.

(ii) By dissolving the other elements in a definite proportion and cooled to room temperature.

	Constituent	Uses
Brass \rightarrow	Cu and Zn	in making utensils
Bronze \rightarrow	Cu and Tin	marking statue medal
Solder \rightarrow	Pb and Tin	in soldering

22. Ans.

A coil of many circular turns of insulated copper wire wrapped closely in the shape of a cylinder is called a solenoid.



The field lines inside the solenoid are in the form of parallel straight lines. This indicates that the magnetic field is same at all the points inside the solenoid.

USE: A strong magnetic field produced inside a solenoid can be used to magnetise a piece of magnetic material, like soft iron, when placed inside the coil.

Or

(a)

- (i) Right hand Thumb rule - Imagine that you are holding a current-carrying straight conductor in your right hand such that the thumb points towards the direction of current.

Then, your fingers will wrap around the conductor in the direction of the field lines of the magnetic field.

- (ii) Fleming's Left hand rule - Stretch the thumb, forefinger and middle finger of your left hand such that they are mutually perpendicular. If the first finger points in the direction of magnetic field and the second finger in the direction of current, then the thumb will point in the direction of motion or the force acting on the conductor.
- (iii) Fleming's Right hand rule - Stretch the thumb, forefinger and middle finger of right hand so that they are perpendicular to each other. If the forefinger indicates the direction of the magnetic field and the thumb shows the direction of motion of conductor, then the middle finger will show the direction of induced current.

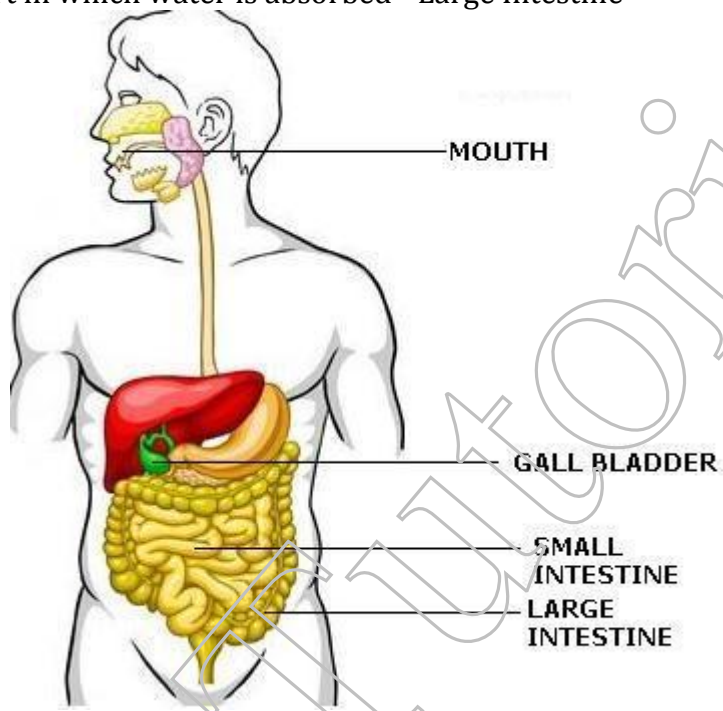
(b) Two safety measures commonly used in domestic electric circuits and appliances are:

- (ii) Provision of electric fuse.
- (iii) Earthing of metal bodies of electrical appliances.

23. Ans

(a) Diagram of human alimentary canal:

- (i) Part in which starch digestion starts - Mouth
- (ii) Part in which bile is stored - Gall bladder
- (iii) Part in which nutrients are absorbed - Small Intestine
- (iv) Part in which water is absorbed - Large Intestine



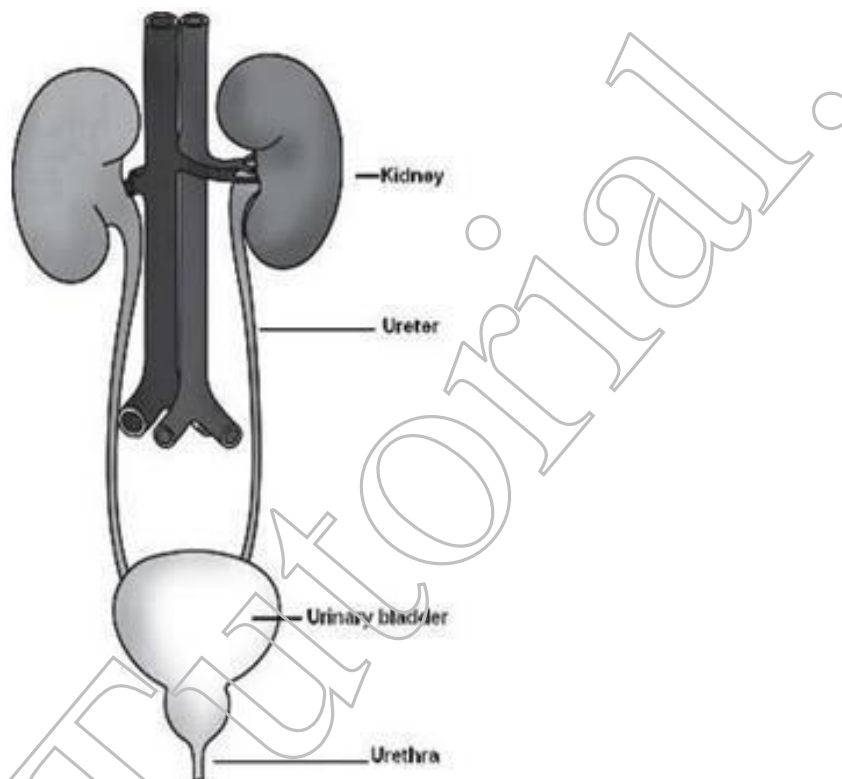
(b) Role of Hydrochloric acid in the stomach: It kills bacteria in the stomach and also provide acidic medium for the action of pepsin.

(c)

- (i) Gastric sphincter: It controls the release of food from the stomach to small intestine.
- (ii) Anal sphincter: It controls the release of undigested waste from the rectum through the anus.

Or

(a) Excretory system of human beings:



(b) Each kidney has large numbers of filtration units called nephrons packed close together. Some substances in the initial filtrate, such as glucose, amino acids, salts and a major amount of water, are selectively reabsorbed, leaving the urine as waste.

(c) Water, resins, gums (any two).

24. Ans

(a)

(i) Iodized salt containing iodine is necessary for the thyroid gland to secrete thyroxin hormone. Thyroxin regulates carbohydrates, proteins and fat metabolism in the body, to provide best balance for growth.

(ii) If iodine is insufficient in one's diet, then its deficiency can cause goitre.

(b) The feedback mechanism regulates the timing and amount of hormone to be secreted in our body. For example, if a person has more sugar in his blood this is detected by the cells of the pancreas. As a result more insulin will be secreted to oxidize the sugar. In a reverse situation the secretion of insulin will be depleted.

Or

(a)

- (i) Cytokinin is present in greater concentration in the areas of rapid cell division.
- (ii) Plant growth promoter - Auxin, Gibberellin, Cytokinin (Any one)
Plant growth inhibitor → Abscisic acid

(b)

- (i) Cytokinins regulate and promote the process of cell division in plants.
- (ii) They help in breaking the dormancy in seeds and buds.

SECTION-B

25. **Ans.** (i) and (ii)

26. **Ans.** Dilute hydrochloric acid

27. **Ans.** Litmus paper

28. **Ans.** Immediately a brisk effervescence occurs due to evolution of carbon dioxide gas.

29. **Ans.** 'Cu' because iron displaces copper from copper sulphate.

30. **Ans.** The positions of voltmeter and ammeter should be exchanged.

31. **Ans** $V \propto I$ and when V is zero, I is zero.

32. **Ans.** In both circuits, equivalent resistance is 4.5 ohm.

$$I = V/R = 4.5/4.5 = 1 \text{ A}$$

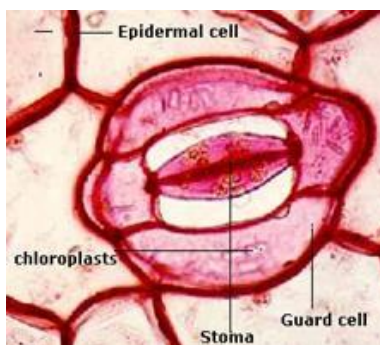
33. **Ans.** Voltmeter and resistor are connected in parallel.

34. **Ans.** Voltmeter should be connected in parallel across the series combination of resistances R_1 and R_2 .

35. **Ans.** On increasing the number of cells, the applied voltage increases which results in an increase in the voltage drop across R . Since $V \propto I$, so current I also increases.

36. **Ans.** In all the three cases, the two resistances are connected in series.

37. Ans. Epidermal cells, stomata and guard cells, each with one nucleus and many chloroplasts.



38. Ans. A healthy destarched potted plant.

39. Ans. To test for the presence of starch Iodine solution is used.

40. Ans. Glycerine, as it prevents specimen from drying during preparation of temporary mount.

41. Ans. 3. As chloroplast is located in guard cells which is 2. While 4 is stomatal pore and 1 is epidermis.

42. Ans. Water level rises in the bent tube in the beaker as it indicates that CO_2 is produced.