Time Allowed : 3 hours | Maximum Marks : 90

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. All questions of **Section-A** and all questions of **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 in **one sentence**
5. Question numbers **4** to **6** in **Sections-A** are **two marks** questions. These are to be answered in about **30 words** each.
6. Question numbers **7** to **18** in **Section-A** are **three marks** questions. These are to be answered in about **50 words** each
7. Question numbers **19** to **24** in **Section-A** are **five marks** questions. These are to be answered in about **70 words** each.
8. Question numbers **25** to **33** 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.
9. Question numbers **34** to **36** in **Section-B** are questions based on practical skills. Each question is of two **marks**.

SECTION-A

1 Diffusion is insufficient to meet the oxygen requirements of multicellular organisms like human. State reason. 1

2 Write the relation between resistance (R) of filament of a bulb, its power (P) and a constant voltage V applied across it. 1

3 Name any two devices used to harness solar energy. 1

4 A white chemical compound becomes hard on mixing proper quantity of water. It is also used to maintain joints in a fixed position. Name the chemical compound and write its chemical formula. Write the chemical equation to show what happens when water is added to this compound in proper quantity. 2

5 State reason for the following : 2

(i) Silver articles become black after some time when exposed to air.

(ii) Although aluminium is a highly reactive metal, yet its articles do not corrode.

6 Explain the following terms : 2

(i) hydrotropism

(ii) geotropism

7 (a) Define olfactory indicators. Name two substances which can be used as olfactory indicators. 3

(b) Choose strong acids from the following :

CH_3COOH, H_2SO_4, H_2CO_3, HNO_3

8 Classify the following chemical reactions as exothermic or endothermic : 3

(i) Water is added to quicklime.

(ii) Dilute sulphuric acid is added to zinc granules.

(iii) When ammonium chloride is dissolved in water in a test tube it becomes cold.

(iv) The decomposition of vegetable matter into compost.

(v) Electrolysis of water.

(vi) Silver chloride turns grey in the presence of sunlight to form silver metal.

9 Distinguish between the following : 3

(i) Electrolytic reduction and electrolytic refining

(ii) Mineral and ore

(iii) Alloys and amalgams

10 Answer the following questions : 3

(a) Name two metals which melt when kept on Palm.

(b) Name two metals which do not react with oxygen even on heating. What is the likely position of such metals in the reactivity series ?

(c) What happens when steam is passed over hot iron. Write its chemical equation.

11 Explain the importance of the evolution of reflex arcs in animals. 3

12 State the role of the following in the digestion of food in humans : 3

(i) Trypsin protein (ii) Lipase fats (iii) Intestinal juice

13 State with reason the importance of iodised salt in our diet. Name the disease caused due to deficiency of iodine and state its symptom. 3

14 How do we connect ammeter and voltmeter in an electric circuit? Draw a circuit diagram to justify your answer. What is likely to happen if the positions of these instruments are interchanged? Give reason. 3

15 What are magnetic field lines? List two characteristic properties of these lines. 3

16 What is an electromagnet? Draw a circuit diagram to show how a soft iron can be changed into an electromagnet by a solenoid. Identify the region in the solenoid where field is uniform. 3

17 Recently when Government decided to set up a nuclear power plant in an area, NGOs and local people raised their voice against it. They demanded that the Government should assure safety measures before setting up such a plant and Government assured them of it. 3

(a) Explain the value exhibited by people of the area.

(b) List any two concerns of the people for which they were demanding safety measures.

18 Write any three disadvantages of using fossil fuels. 3

19 Define rancidity. What kind of substances are used to prevent rancidity ? Explain any three methods to prevent rancidity. 5

20 Give suitable reason for the following statements : 5

(i) Rain water conducts electricity but distilled water does not.

(ii) We feel burning sensation in the stomach when we overeat.

(iii) A tarnished copper vessel regains its shine when rubbed with lemon.

(iv) The crystals of washing soda change to white powder on exposure to air.

(v) An aqueous solution of sodium chloride is neutral but an aqueous solution of sodium carbonate is basic.

21 (a) Draw a schematic flow chart representing double circulation of blood in human heart. 5

(b) Why do ventricles have thicker muscular walls than the atria? State the role of valves located between atria and ventricles.

22 (a) Will current flow more easily through a thin wire or a thick wire of the same material. When connected to the same source. Why? 5

(b) Some electric lamps connected to a 220 volts electric supply lines are rated 20 W. How many lamps can be connected in parallel with each other across the two wires of 220 volts lines, if the maximum allowable current is 5A?

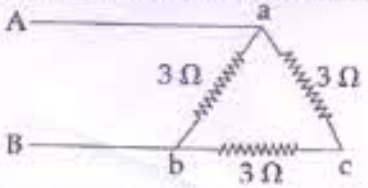
23 What are magnetic field lines ? List three characteristics of these lines. Describe in brief an activity to study the magnetic field lines due to a current carrying circular coil. 5

24 For the parallel combination of resistors establish the relation : 5

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

where the symbols have their usual meanings.

Find the resistance between A and B in the following network.



SECTION - B

25 A drop of lemon juice when poured on pH paper the observation is : 1

(a) pH paper becomes yellow-orange
(b) pH paper becomes red
(c) pH paper becomes green
(d) pH paper becomes blue

26 A student was given a solution to find its pH. His teacher declared his recorded pH as wrong. Student explained to his teacher, all the steps done by him while finding pH of sample. Mark the step taken by student in which he committed mistake. 1

(a) collection of apparatus
(b) cleaning of all apparatus
(c) making pH paper wet and then dip it in sample.
(d) recording observation.

27 Four students A, B, C and D studied the reactions of zinc and sodium carbonate (Na_2CO_3) with dil HCl and dil NaOH solutions and presented their results as follows (The sign ✓ represents evolutions of a gas and × absence of any reactions) 1

A

	Zn	Na_2CO_3
HCl	✓	✓
NaOH	✓	×

B

	Zn	Na_2CO_3
HCl	✓	×
NaOH	✓	✓

C

	Zn	Na_2CO_3
HCl	×	×
NaOH	✓	✓

D

	Zn	Na_2CO_3
HCl	✓	✓
NaOH	×	×

The right set of observation is that of student :

(a) A (b) B (c) C (d) D

28 Four test tubes containing solutions are shown along with colours. $CuSO_4$ is contained in : 1

Green (I) Orange (II) Blue (III) Yellow (IV)

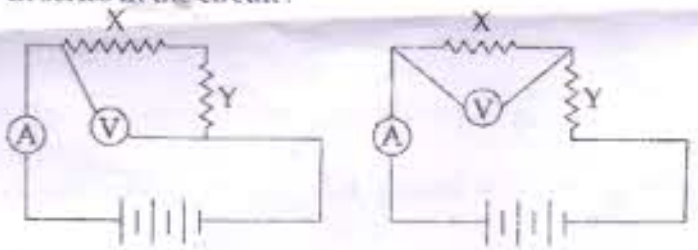
(a) I (b) II
(c) III (d) IV

29 A few small pieces of aluminium metal were added to ferrous sulphate solution. It was observed that : 1

(a) Pale green colour of solution disappears, and it becomes colourless.
(b) Pale green colour of solution persists.

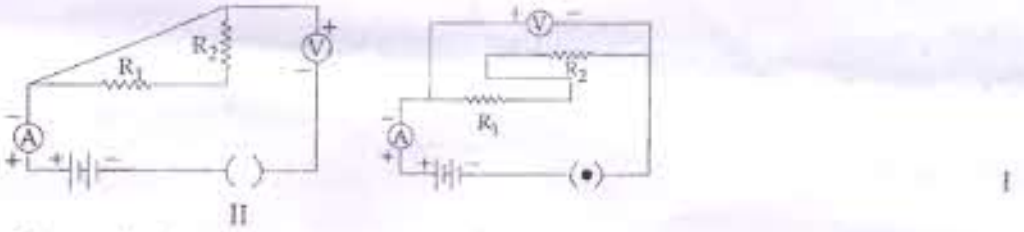
(c) Pale green colour of solution turns blue.
(d) Pale green colour of solution turns red.

30 Out of the two circuits given below, the two resistors X and Y have been correctly connected in series in the circuit : 1



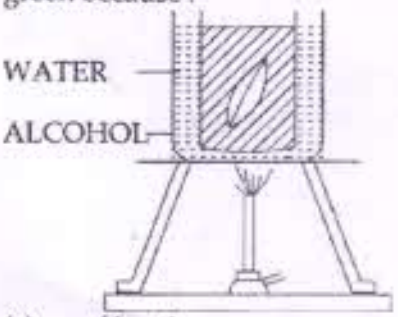
(a) I (b) II
(c) both I and II (d) none of these

31 A student observes the given circuit diagrams and writes observations as follows : 1



Correct observation is : -
(a) Resistances R_1 and R_2 are connected in parallel in both circuit diagrams I and II.
(b) Resistances R_1 and R_2 are connected in series in both circuit diagrams I and II.
(c) Resistances R_1 and R_2 are connected in series in circuit I and in parallel in circuit II.
(d) Resistances R_1 and R_2 are connected in parallel in circuit I and in series in circuit II.

32 During an experiment on photosynthesis, in the step shown in figure below, the alcohol turns green because : 1



(a) of heating
(b) chlorophyll being organic in nature, dissolves in it
(c) of the impurities of the surroundings
(d) cells of leaf disintegrate in it

33 In the experiment to show that 'CO_2 is given out during respiration,' the partial vacuum created in the conical flask is due to: 1

(i) Air-tight connections
(ii) Absorption of CO_2 by KOH
(iii) Loose connections
(iv) Absorption of O_2 by KOH

The correct statements are:

(a) (ii), (iii) (b) (i), (ii)
(c) (iv), (ii) (d) (iii), (iv)

34 On heating ferrous sulphate crystals gently in a boiling tube, what do you observe with respect to the following ? 2

(i) What was the colour of crystals before heating ?
(ii) Write the colour of residue left in the test tube after heating.
(iii) What is the colour of the gases evolved ?
(iv) Mention the small of the gases.

35 Draw a diagram of a circuit showing a resistor and a voltmeter connected in parallel. 2

36 In an experiment to prepare temporary mount of a leaf peel, the stained leaf peel is put on a drop of glycerine. Explain why? 2

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