

CBSE Class 10 Science Sample Paper SA 1

Set 4

Time: 3hrs

M.M.: 80

General Instructions :-

- (i) The question paper comprises of **two Sections, A and B**. You are to attempt both the sections.
- (ii) **All questions are compulsory.**
- (iii) 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 questions is to be attempted.
- (iv) **All questions of Section-A and all questions of Section-B** are to be attempted separately.
- (v) Question numbers **1 to 3 in Section-A** are **one mark** questions. These are to be answered in **one word** or in **one sentence**.
- (vi) Question numbers **4 to 7 in Section-A** are **two marks** questions. These are to be answered in about **30 words** each.
- (vii) Question numbers **8 to 19 in Section-A** are **three marks** questions. These are to be answered in about **50 words** each.
- (viii) Question numbers **20 to 24 in Section-A** are **five marks** questions. These are to be answered in about **70 words** each.
- (ix) 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.

SECTION: 'A'

1. In domestic electric circuit, with which wire do we connect a fuse? [1]
2. Name the two components of central nervous system in humans. [1]
3. Name one fuel used in nuclear reactor. [1]
4. Write the chemical reaction for respiration. Why is it considered an exothermic reaction? [2]
5. Mention one physical property each of a metal and a non-metal which is exceptional to their general properties. [2]
6. A battery of 12 V is connected to a series combination of resistors, 3 Ω , 4 Ω , 5 Ω , and 12 Ω . How much current would flow through the 12 Ω resistor? [2]
7. Why do two magnetic field lines never intersect each other? [2]
8. In the electrolysis of water: [3]
 - (i) Name the gas collected at the cathode and anode respectively
 - (ii) Why is the volume of one gas collected at one electrode double than that at the other? Name this gas.
 - (iii) How will you test the evolved gases?

9. Giving one example of each, define the following terms: [3]
(i) Corrosion (ii) rancidity

10. To the three solutions listed below, a few drops of phenolphthalein and blue litmus were added separately. Specify the color change in each case, if any: [3]

Name of the solution	Colour change with Phenolphthalein	Colour change with blue litmus
1.Sodium carbonate		
2.Hydrochloric acid		
3.Sodium chloride		

11. Write the chemical equation that takes place when _____. [3]

- (i) Cinnabar is heated in air.
- (ii) Zinc carbonate is calcinated.
- (iii) Zinc sulphide is roasted.

12. (i) Calculate the electrical energy consumed by a 1200 W toaster in 30 minutes. [3]
(ii) What will be the cost of using the same for 1 month if one unit of electricity costs Rs 4.

13. Give reasons for the following:- [3]

- (i) Household appliances are connected in parallel
- (ii) Alloys instead of pure metals are used in making heating elements of heating devices.
- (iii) Aluminium and Copper are used for making wires for long distance transmission of power.

14. What is a solenoid? Draw a diagram to show the magnetic field lines around a current carrying solenoid. Mention two ways to increase the strength of the field of a solenoid. [3]

15. List in tabular form, three differences between arteries and veins. [3]

16. State two functions of plant hormones? Name four different types of plant hormones. [3]

17. (a) Draw the structure of neuron and label cell body and axon. [3]
(b) Name the part of neuron:
(i) Where information is acquired
(ii) through which information travels as an electrical impulse.

18. Explain the principle and working of a biogas plant using a labelled schematic diagram. [3]

19. (a) Why is concave mirror used in some solar cookers in place of a plane mirror? [3]
(b) Mention any two factors which affect the cooking time of a solar cooker?
(c) State a limitation of using solar cooker.

20. The metals extracted from their ores are not very pure. [5]

They contain impurities, which can be removed by the process of refining. Name the most widely used process of refining impure metals. Draw a diagram of the apparatus used for refining of copper metal and state:

- (i) The name of the rods which are used as cathode and anode
- (ii) The electrolyte used during the process.
- (iii) What happens to the pure metal when current passes through the electrolyte?
- (iv) What happens to the soluble and insoluble impurities present in the impure copper?

OR

- (i) Write the electron - dot structures for sodium (11), oxygen (8), chlorine (17) and Magnesium (12) [Numbers given in parenthesis are atomic numbers of elements] Show the formation of Na_2O and MgO by the transfer of electrons.
- (ii) Name the ions present in these compounds?

- 21.** A student dropped few pieces of marble in dilute hydrochloric acid, contained in a test - tube. The evolved gas was then passed through lime water. What change would be observed in lime water? What will happen if excess of gas is passed through lime water? With the help of balanced chemical equations for all the changes explain the observations.

[5]

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 and
 - (v) weakly alkaline

Arrange the solutions in increasing order of H^+ ion concentration

- (b) Name the acid and base from which the following salts have been formed.
 - (i) Sodium acetate
 - (ii) Ammonium chloride

- 22.**
- (a) What is an electric circuit? **[5]**
 - (b) Calculate the number of electron that flow per second to constitute a current of one ampere. Charge on an electrons is $1.6 \times 10^{-19} \text{ C}$
 - (c) Draw an electric circuit for studying Ohm's law. Label the circuit component used to measure electric current and potential difference.

OR

- (a) Define potential difference between two points in a conductor
- (b) Name the instrument used to measure the potential difference in a circuit. How is it connected?
- (c) A current of 2A passes through a circuit for 1 minute. If potential difference between the terminals of the circuit is 3 V, what is the work done in transferring the charges?

23. Describe briefly an activity to : (i) demonstrate the pattern of magnetic field lines around a straight current carrying conductor and (ii) find the direction of magnetic field produced for a given direction of current in the conductor. Name and state the rule to find the direction of magnetic field around a straight current carrying conductor. Draw a diagram to explain the same activity. [5]

OR

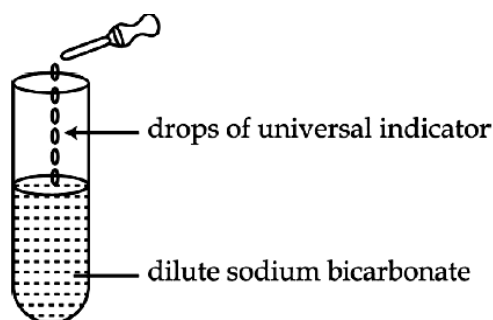
- (a) Name and state the rule to determine the direction of a
- (i) Force experienced by a current carrying straight conductor placed in a magnetic field which is perpendicular to it.
 - (ii) Magnetic field produced around a current carrying circular loop.
 - (iii) Current induced in a coil due to its rotation in a magnetic field.
- (b) Explain the function of an earth wire? Why is it necessary to earth metallic appliances?
24. (a) Draw a diagram of human respiratory system and label on it: [5]
- (i) larynx
 - (ii) trachea
 - (iii) lungs
 - (iv) bronchi
- (b) Why do the walls of the trachea not collapse when there is less air in it?

OR

- (a) Draw a diagram to show open stomatal pore and label on it:
- (i) guard cells
 - (ii) chloroplast
- (b) State two functions of stomata.
- (c) How do guard cells regulate the opening and closing of stomatal pore?

SECTION - B

25. During the experiment of heating of Ferrous sulphate crystals, four students recorded their observations as: [1]
- (i) green colour, of crystals changes to brown black colour
 - (ii) brownish yellow gas is evolved
 - (iii) blue colour of crystals changes to green colour
 - (iv) smell of burning sulphur is felt
- Which of the above observations are correct ?
- (a) (i), (ii)
 - (b) (i), (iv)
 - (c) (ii), (iii)
 - (d) (iii), (iv)
26. An iron nail is placed in a solution of copper sulphate. The nail is taken out after 10 minutes. The nail will be found to be covered with [1]
- (a) brown deposit
 - (b) black deposit
 - (c) white deposit
 - (d) grey deposit
27. A dilute solution of sodium bicarbonate is taken in a test tube and a few drops of the universal indicator is added to it. [1]



The colour observed will be:

- (a) blue (b) yellow (c) orange (d) green

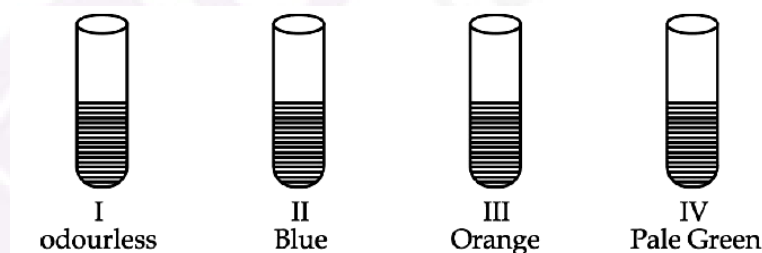
28. A student dips pH papers in solution X and Y and observes that the pH paper turns blue and orange respectively in them. He infers that: [1]

- (a) X is HCl solution, Y is NaOH solution
 (b) X is acetic acid, Y is sodium carbonate solution
 (c) X is sodium carbonate solution, Y is acetic acid
 (d) X is oxalic acid, Y is sodium carbonate solution

29. On bringing a lighted match stick near the mouth of the test - tube in which NaOH and Zn react: [1]

- (a) the matchstick gets extinguished
 (b) the matchstick burns faster
 (c) a pop sound is heard
 (d) no effect is observed on matchstick

30. Four test tubes containing solution of different colour marked I, II, III and IV are shown below. The test tubes containing copper sulphate solution and Ferrous sulphate solution, could be the tubes: [1]

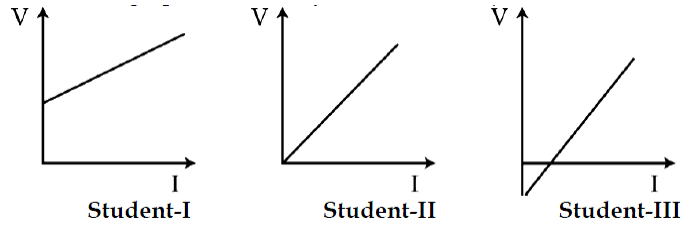


- (a) I and II (c) III and (d) II and IV
 (b) II and III IV

31. When some aluminum powder is added to the solutions of copper sulphate and ferrous sulphate, it is observed after some time that: [1]

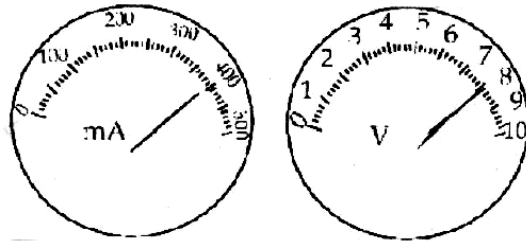
- (a) both solutions become colourless
 (b) the colour of copper sulphate solution fades while that of ferrous sulphate solution does not
 (c) both the solutions retain their colour.
 (d) only ferrous sulphate solution changes its colour

32. In the experiment on studying the dependence of current (I) on the potential difference (V), three students I, II, III plotted the following graphs between V and I. The graph that is likely to be correct is / are: [1]



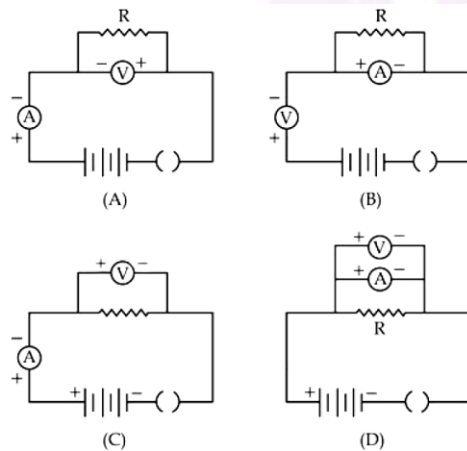
- (a) I only
 (b) II only
 (c) III only
 (d) all the three students

33. The current flowing through a resistor connected in an electric circuit and the potential difference developed across the ends of it are as shown in the diagrams. [1]



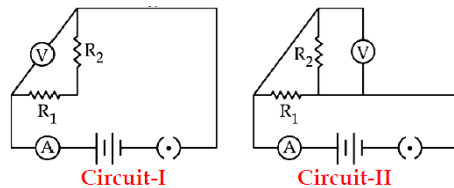
The value of the resistance of the resistor is :
 (a) 20Ω (b) 0.024Ω (c) 24Ω (d) 0.02Ω

34. The correct set up for studying the dependence of the current on the potential difference across a resistor is: [1]



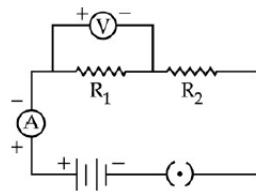
- (a) A (b) B (c) C (d) D

35. In the circuits given below. The resistors R1 and R2 are connected: [1]

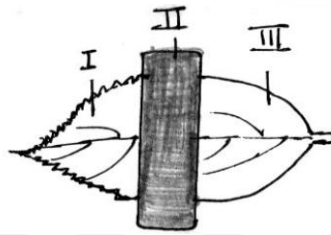


- (a) in parallel in both circuits
 (b) in series in both circuits
 (c) in parallel in circuit I and series in circuit II
 (d) in series in circuit I and parallel in circuit II

36. A student set up electric circuit shown here for finding the equivalent resistance of two resistors in series. In this circuit. [1]



- (a) resistors have been connected correctly but the voltmeter has been wrongly connected.
 (b) resistors have been connected correctly but the ammeter has been wrongly connected.
 (c) resistors as well as voltmeter have been wrongly connected.
 (d) resistors as well as ammeter have been wrongly connected.
37. Given below is the diagram of a leaf partially covered with black paper and which is to be used in the experiment to show that light is necessary for the process of photosynthesis. At the end of the experiments, which one of the leaf parts labelled I, II and III will become blue - black when dipped in iodine solution? [1]



- (a) I only (b) II only (c) I and III (d) II and III
38. The best result for the experiment that light is necessary for photosynthesis be yielded by using leaves from a plant kept for over twenty - four hours: [1]
- (a) in a pitch dark room
 (b) in a dark room with table lamp switched on
 (c) outside in the garden
 (d) outside in the garden covered by glass
39. Students were observing the temporary mount of a stained epidermal peel under a microscope. They were later asked to draw the guard cells surrounding stoma. The correct diagram must illustrate guard cells having: [1]
- (a) many nuclei and many chloroplasts.
 (b) one nucleus and one chloroplast.
 (c) few nuclei and one chloroplast.
 (d) one nucleus and many chloroplasts.
40. Stomata plays an important role in: [1]
- (a) respiration (c) transpiration
 (b) photosynthesis (d) all of the above

41. In the experiment 'To show that CO_2 is given out during respiration', the water level in the bent tube rises after sometime because: [1]
- (a) the germinating seeds consume all the O_2 and CO_2 in the flask.
 - (b) the germinating seeds consume all the O_2 and gives out CO_2 which is absorbed by a chemical filled in the small test tube.
 - (c) CO_2 is given out by the germinating seeds.
 - (d) seeds need water for germination and grow.
42. In the experiment to show that CO_2 is given out during respiration, the chemical filled in the small test tube is: [1]
- (a) alcohol
 - (b) KOH
 - (c) lime water
 - (d) iodine solution

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