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CBSE Sample Paper-03
SCIENCE (Theory) Class – X

Time allowed: 3 hours

Maximum Marks: 90

General Instructions:

- All questions are compulsory.
- The question paper comprises of two sections, A and B. You are to attempt both the sections.
- Questions 1 to 3 in section A are one mark questions. These are to be answered in one word or in one sentence.
- Questions 4 to 6 in section A are two marks questions. These are to be answered in about 30 words each.
- Questions 7 to 18 in section A are three marks questions. These are to be answered in about 50 words each.
- Questions 19 to 24 in section A are five marks questions. These are to be answered in about 70 words each.
- Questions 25 to 27 in section B are 2 marks questions and Questions 28 to 36 are multiple choice questions based on practical skills. Each question of multiple choice questions is a one mark question. You are to select one most appropriate response out of the four provided to you.

Section A

- Define Electrolysis.
- What is breathing?
- A wire of resistance $10\ \Omega$ is bent in the form of a closed circle. What is the effective resistance between the two points at the ends of any diameter of the circle?
- A calcium compound which is a yellowish white powder is used as a disinfectant and also in textile industry. Name the compound. Which gas is released when this compound is left exposed to air?
- Name the ovarian hormones and give the function of any one of them.
- What is the difference between direct and alternating currents? Write one important advantage of using alternating current.
- Balance the ionic equation:
 - $\text{Cu}(s) + \text{Ag}^+ \longrightarrow \text{Cu}^{2+} + \text{Ag}$
 - $\text{Al} + \text{H}^+ \longrightarrow \text{Al}^{3+} + \text{H}_2$
 - $\text{Fe}^{3+} + \text{Cr} \longrightarrow \text{Fe}^{2+} + \text{Cr}^{3+}$
- Write one equation each for decomposition reactions where energy is supplied in the form of heat, light or electricity.
- (i) Differentiate between 'strong' and 'weak' electrolyte.

(ii) Select the strong electrolytes from amongst the following:

Molten NaCl, glacial CH_3COOH , strong NH_4OH solution, dil. HCl

10. Give reasons:

- (a) Germanium is called a metalloid.
- (b) Zirconium is known as a strategic metal.
- (c) Nitrogen is used to preserve food.

11. (a) What are strategic metals? Give one example also.

(b) State the reason for the following behaviour of Zinc metal:

On placing a piece of Zinc metal in a solution of mercuric chloride, it acquires a shining silvery surface but when it is placed in a solution of magnesium sulphate no change is observed.

12. What is the function of epiglottis in man? Draw a labelled diagram showing the human respiratory system.

13. Draw a diagram of the front view of human heart and label any six parts including at least two, that are concerned with arterial blood supply to the heart muscles.

14. Draw the diagram of a neuron.

15. In a household 5 tubelights of 40 W each are used for 5 hours and an electric press of 500 W for 4 hours everyday. Calculate the total electrical energy consumed by the tubelights and press in a month of 30 days.

16. Aslam is a welder by profession who was working at Mohan's house. After making a 'railing' by using electric welding with naked eyes, Aslam was using a grinder on it to smoothen the welding joints. Just then some particles fell into Aslam's eye. He started crying with pain. Mohan hired an auto and took him to an eye hospital, doctor used a device connected to two electric wires to remove the particles from Aslam's eye. Aslam asked Mohan what had fallen into his eye and what device was used by the doctor to remove that particle from the eye. Being a science student of class X, Mohan explained everything to Aslam and asked him to be careful in future.

Read the above passage and answer the following questions:

- (a) What could be the particle fell into Aslam's eye?
- (b) What device was used by the doctor to remove the particle and how it worked?
- (c) What values are shown by Mohan during this episode?

[Value Based Question]

17. Explain the difference between nuclear fission and nuclear fusion reaction with examples. Give reason why the energy due to fusion is not being used to meet our day to day energy needs?

18. With the help of a labelled diagram, describe the working of a solar water heater.

19. With the help of an activity, explain that hydrogen and oxygen are released when electric current is passed through water.

Or

(a) Crystal of copper sulphate are heated in a test tube for some time:

- (i) What is the colour of copper sulphate crystals before heating and after heating?


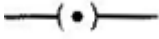
- (ii) What is the source of liquid droplets seen on the inner upper side of the test tube during the heating process?
- (b) A metal 'X' when dipped in aqueous solution of aluminium sulphate no reaction is observed whereas when it is dipped in an aqueous solution of ferrous sulphate, the pale green solution turns colourless. Identify the metal 'X' with reason.
20. (i) Define the term alloy and amalgam. Name the alloy used for welding electric wires together. What are its constituents.
- (ii) Name the constituents of the following alloys:
 (a) Brass (b) Stainless steel (c) Bronze
- State one property in each of these alloys, which is different from its main constituents.

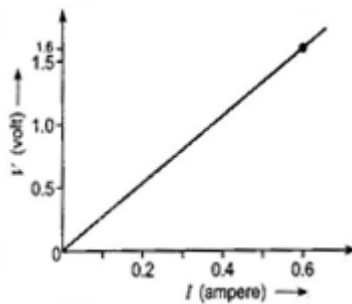
Or

What method of concentration of ore is preferred in each of the following cases and why?

- (i) The ore has higher density particles interspersed with a large bulk of low density impurities.
- (ii) The ore consists of copper sulphide intermixed with clay particles.
- (iii) Give an example of amalgam.
21. (i) Name the blood vessel that brings oxygenated blood to human heart.
- (ii) Which chamber of human heart receives oxygenated blood?
- (iii) Explain how oxygenated blood from this chamber is sent to all parts of the body.

Or

- (i) Name the blood vessel that brings deoxygenated blood to human heart.
- (ii) Which chamber of human heart receives deoxygenated blood?
- (iii) Explain how deoxygenated blood from this chamber is sent to lungs for oxygenation.
22. (a) Name an instrument that measures electric current in a circuit. Define the unit of electric current.
- (b) What do the following symbols represent in a circuit diagram:
- (i)  (ii) 
- (c) An electric circuit consisting of a 0.5 m long Nichrome wire XY, an ammeter, a voltmeter, four cells of 1.5 V each and a plug key was set up.
- (i) Draw the electric circuit diagram to study the relation between the potential difference maintained between the points X and Y and the electric current flowing through XY.
- (ii) Following graph was plotted between V and I values using above circuit:



What would be the values of $\frac{V}{I}$ ratios when the potential difference is 0.8 V, 1.2 V and 1.6 V respectively? What conclusion do you draw from these values?

Or

Explain the following:

- (i) Why is the tungsten used almost exclusively for filament of an electric lamp?
 - (ii) Why are the elements of electric heating devices, such as bread-toaster and electric irons, made of an alloy rather than a pure metal?
 - (iii) Why is the series arrangement of appliances not used for domestic circuits?
 - (iv) How does the resistance of a wire vary with its area of cross-section?
 - (v) Why are copper and aluminium wires usually employed for electric energy transmission?
23. What is electromagnetic induction? Give two methods of inducing electric current in a coil. Explain each method with the help of diagram.

Or

Draw a labelled diagram of domestic circuit. What is the importance of earthing in a circuit?

24. State the principle on which an electromagnet works. Describe an activity to make an electromagnet. Give two uses of electromagnet.

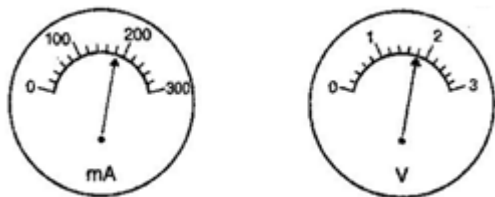
Or

Describe an activity to draw magnetic lines of force around a current carrying (a) straight conductor, (b) circular loop.

Section B

25. Which of the following gas turn limewater milky:
- | | |
|--|---|
| (a) CO ₂ | (b) SO ₂ |
| (c) Both CO ₂ and SO ₂ | (d) Neither CO ₂ nor SO ₂ |
- Write chemical reactions involved.
26. A student wanted to decolourise a leaf. In which solvent, he should boil the leaf? Justify your answer.

27. The current flowing through a resistor connected in an electrical circuit and the potential difference developed across its ends is shown in figure. Calculate the value of resistance of the resistor in ohms.



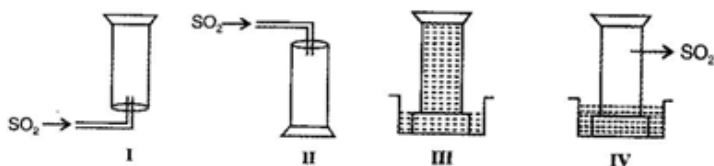
28. Given below are the observations reported by four students I, II, III and IV for the changes observed with dilute HCl or dilute NaOH and different materials.

Material	DilHCl	Dil. NaOH
I. Moist litmus paper	Blue to red	Red to blue
II. Zinc metal	React at room temperature	Does not react at room temperature
III. Zinc metal on heating	Liquid becomes milky	Remains clear and transparent
IV. Solid sodium bicarbonate	No reaction	Brisk effervescence

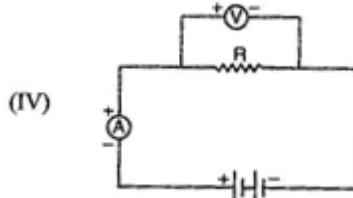
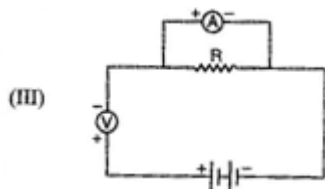
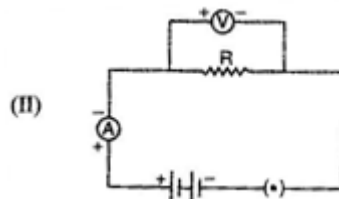
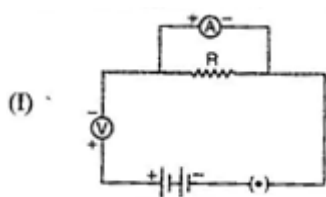
The incorrectly reported observation is:

- (a) I (b) II (c) III (d) IV
29. Dil. H_2SO_4 cannot be used in preparation of SO_2 because:
- (a) It is not a good oxidizing agent.
 (b) It is a good reducing agent.
 (c) It is bleaching agent.
 (d) It is dehydrating agent.
30. A student asked to demonstrate the following two properties of sulphur dioxide gas:
- I. It is heavier than air and
 II. It is highly soluble in water.

Which two of the following four arrangements would the student use to demonstrate these properties:



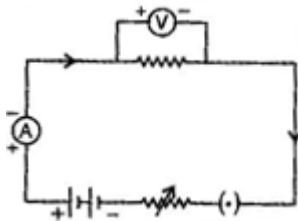
- (a) I and II (b) II and III (c) I and III (d) II and IV
31. Medulla Oblongata is originated from:
- (a) Mesoderm (b) Ectoderm (c) Endoderm (d) Ectomesoderm
32. The innermost layer of the human eye is:
- (a) sciera (b) cornea (c) retina (d) lens
33. In the experiment on studying the dependence of current (I) on potential difference (V), four student set up their circuits as shown below:



The best set up is that of:

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

34. The following circuit diagram shows the experimental set-up for the study of dependence of current on potential difference. Which two circuit components are connected in series:



- (a) Battery and Voltmeter (b) Ammeter and Voltmeter
 (c) Ammeter and Rheostat (d) Resistor and Voltmeter
35. For a current in a long straight solenoid N and S-poles are created at the two ends. Among the following statements, the incorrect statement is:
- (a) The field lines inside the solenoid are in the form of straight lines which indicate that the magnetic field is the same at all the points inside the solenoid.
 (b) The strong magnetic field produced inside the solenoid can be used to magnetize a piece of magnetic material like soft iron, when placed inside the coil.
 (c) The pattern of magnetic field associated with the solenoid is different from the pattern of the magnetic field around a bar magnet.
 (d) The N and S-poles exchange position when the direction of current through the solenoid is reversed.
36. Which is the ultimate source of energy:
 (a) Water (b) Sun (c) Uranium (d) Fossil fuels

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