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CBSE Sample Paper-04

SCIENCE (Theory)

Class - X

Time allowed: 3 hours

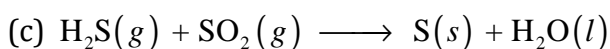
Maximum Marks: 90

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

- What happens when a chemical reaction occurs?
- Name the two stages of photosynthesis.
- What is meant by the statement, "Potential difference between points A and B in an electric field is 1 volt"?
- (a) What is observed when sulphur dioxide is passed through (i) water, (ii) limewater?
(b) Also write chemical equations for the reactions that takes place.
- Name the hormone responsible for regulation of:
 - Metabolism of carbohydrates, fats and proteins.
 - Balance of calcium and phosphate.
 - Blood pressure.
 - Water and electrolytic balance.
- With the help of neat diagram describe how you can generate induced current in the circuit.
- Identify the substances oxidized and the substances reduced in the following reactions. Write the ionic equation for the substances oxidized and reduced.
 - $\text{H}_2(g) + \text{Cl}_2(g) \longrightarrow 2\text{HCl}(g)$
 - $\text{H}_2(g) + \text{CuO}(s) \longrightarrow \text{Cu}(s) + \text{H}_2\text{O}(l)$



8. $2\text{FeSO}_4(s) \longrightarrow \text{Fe}_2\text{O}_3(s) + \text{SO}_2(g) + \text{SO}_3(g)$. Is it a redox reaction or not? If yes, why?
9. (a) Write the formula and chemical name of Bleaching powder.
 (b) Write chemical equation to represent the action of atmospheric CO_2 gas on bleaching powder when left exposed in open.
 (c) State for what purpose is bleaching powder used in water treatment plants.
10. Mrs. Sharma has gone to the jewelers to buy gold jewellery. She asks the jeweler if the jewellery is made of pure gold. The jeweler assure her that it is 10% gold and nothing has been mixed in it. Mrs. Sharma is happy and buys the necklace.
 Read the above passage and answer the following questions:
 (a) Was the jeweler right in saying that the necklace is made of 100% gold?
 (b) What values are promoted by the jeweler?
 (c) What precautions should you take while purchasing gold jewellery?
 (d) Why does Government insist on purchasing Hallmarked jewellery?

[Value Based Questions]

11. Describe with labelled diagram, the Froth Floatation Process used to separate the gangue from a Sulphide ore.
12. (a) Draw diagram of a Stomata when it is open.
 (b) Label Epidermal cell, Guard cell, Chloroplast and Stomatal opening on the diagram drawn.
13. Write the functions of the following in the digestive process:
 (a) Bile
 (b) Bicarbonate secreted by the duodenal wall.
 (c) Pancreatic amylase.
14. What are 'hormones'? Write any two functions of hormones.
15. (a) State Ohm's law.
 (b) Draw a schematic diagram of the circuit for studying Ohm's law.
16. The flow of a current in a circular loop of wire creates a magnetic field at its centre. How many existence of this field be detected? State the rule which helps to predict the direction of this magnetic field.
17. (a) Describe the steps involved in obtaining biogas and explain what is meant by anaerobic decomposition.
 (b) Which isotope of Uranium can undergo fission readily?
18. (a) State one limitation of solar energy available from solar cells.
 (b) What is the minimum wind velocity required to obtain useful energy with a wind mill.
 (c) Define the term 'Nuclear fission'.
19. Identify the type of chemical reaction taking place in each of the following:
 (i) Barium chloride solution is mixed with copper sulphate solution and a white precipitate is observed.
 (ii) On heating copper powder in air in a China dish, the surface of copper powder turns black.

- (iii) On heating green coloured ferrous sulphate crystals reddish brown solid is left and small of a gas having odour of burning sulphur is experienced.
- (iv) Iron nails when left dipped in blue copper sulphate solution become brownish in colour and the blue colour of copper sulphate fades away.
- (v) Quick lime reacts vigorously with water releasing a large amount of heat.

Or

During the reaction of some metals with dilute hydrochloric acid, following observations were made:

- (i) Silver metal doesn't show any change.
- (ii) The temperature of reaction mixture rises when aluminium (Al) is added.
- (iii) The reaction of sodium metal is found to be highly explosive.
- (iv) Some bubbles of a gas are seen when lead (Pb) is reacted with the acid.
- (v) A gas produced when sodium carbonate is added to the acid.

Explain these observations giving suitable reasons.

20. Give reasons for the following:

- (a) Metals conduct electricity.
- (b) Metals generally do not form compounds with hydrogen.
- (c) A piece of zinc placed in blue copper sulphate solution decolourize it.
- (d) Alumina is dissolve in molten cryolite for electrolysis to obtain aluminium metal.
- (e) Nitrogen gas is used to preserve food.

Or

- (a) What is corrosion of metals? Name one metal which does not corrode and one which corrodes on being kept in atmosphere.
 - (b) How will you show that the rusting of iron needs oxygen and moisture at the same time.
21. (a) Draw a diagram of human alimentary canal.
- (b) Label oesophagus, Liver, Pancreas and Gall bladder on the diagram drawn.
 - (c) What is the function of enzyme 'pepsin' in the digestion process?

Or

- (a) Draw a diagram of the human urinary system and label on it:
 - (i) Kidney (ii) Ureter (iii) Urinary bladder (iv) Urethra
 - (b) Name the two major components of normal human urine.
22. (a) What is the function of an earth wire in electrical instruments? Why is it necessary to earth the metallic electric appliances?
- (b) Explain what is short circuiting and overloading in an electric supply.
 - (c) What is the usual capacity of the fuse wire in the line to feed:
 - (i) Lights and fans?
 - (ii) Appliances of 2 kW or more power?

Or

- (a) State Ohm's law.
 (b) Describe the activity with the help of a diagram to establish the relationship between current (I) flowing in a conductor and potential difference (V) maintained across its two ends.
 (c) Draw the shape of the curve obtained when a graph is plotted between I and V.
23. (a) What is meant by a magnetic field?
 (b) How is the direction of magnetic field at a point determined?
 (c) Describe an activity to demonstrate the direction of the magnetic field generated around a current carrying conductor.
 (d) What is the direction of magnetic field at the centre of current carrying circular loop?

Or

- (a) What is an electromagnet?
 (b) List any of its two uses.
 (c) Draw a labelled diagram to show how is an electromagnet made?
 (d) What is the purpose of the soft iron core used in making an electromagnet?
24. (a) Distinguish between renewable and non-renewable sources of energy giving one example of each.
 (b) Why is the use of wood as a fuel not advised although forests can be replenished?

Or

Explain why:

- (a) It is difficult to burn a piece of wood fresh from a tree.
 (b) Pouring dry sand over the fire extinguishes it.
 (c) It is difficult to use hydrogen as a source of energy.
 (d) Charcoal is considered a better fuel than wood.

Section B

25. In test tube A
- (i) the solution turns blue litmus red
 - (ii) evolves H_2 gas with Zn metal
 - (iii) gives out CO_2 on treatment with Na_2CO_3 .
- In test tube B
- (i) the solution turns red litmus blue,
 - (ii) liberate H_2 with Zn metal and
 - (iii) does not react with Na_2CO_3 .
- What are A and B? Give the chemical reactions involved.
26. (a) In plant, when stomata is opened in night, are called _____.
 (b) Justify your answer.

27. Why key used in electric circuit should be kept off? Give reason.
28. The pH of soft drink is _____ and they are _____.
(a) less than 7, acidic (b) more than 7, basic
(c) equal to 7, neutral (d) less than 7, basic
29. Conc. H_2SO_4 reacts with copper to form a sulphur dioxide gas. In this reaction, conc. H_2SO_4 act as a:
(a) Oxidizing agent (b) Reducing agent
(c) Dehydrating agent (d) Bleaching agent
30. What will happen when excess of SO_2 is passed through limewater and why:
(a) The solution will become colourless due to formation of $Ca(HSO_3)_2$.
(b) Limewater turns milky due to formation of $CaSO_3$.
(c) The solution becomes green due to $CaSO_3$.
(d) The solution becomes pink due to $Ca(HSO_3)_2$.
31. Sunlight used for photosynthesis is:
(a) 5% (b) 50% (c) 0.5% (d) 4%
32. The process in which water is split during photosynthesis is called:
(a) Photolysis (b) Hydrolysis (c) Glycolysis (d) None of these
33. Ammeter is always connected in:
(a) Series (b) Parallel
(c) Either in series or parallel (d) Neither in series nor in parallel
34. For current flow one need a:
(a) Closed circuit (b) Source of potential difference
(c) Both (a) and (b) (d) Neither (a) nor (b)
35. A voltmeter connected in parallel to a resistor reads 0.1 volt. There is:
(a) Zero error (b) Positive error (c) Negative error (d) Both (b) & (c)
36. Which of the following is a non-renewable source of energy:
(a) Wood (b) Sun (c) Fossil fuels (d) Wind

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