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CBSE Sample Paper-05

SCIENCE (Theory)

Class - X

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Time allowed: 3 hours

Maximum Marks: 90

**General Instructions:**

- a) All questions are compulsory.
- b) The question paper comprises of two sections, A and B. You are to attempt both the sections.
- c) Questions 1 to 3 in section A are one mark questions. These are to be answered in one word or in one sentence.
- d) Questions 4 to 6 in section A are two marks questions. These are to be answered in about 30 words each.
- e) Questions 7 to 18 in section A are three marks questions. These are to be answered in about 50 words each.
- f) Questions 19 to 24 in section A are five marks questions. These are to be answered in about 70 words each.
- g) 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.

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**Section A**

1. What happens when a chemical reaction occurs?
2. Name the excretory unit of kidney.
3. There are two electric bulbs (i) marked 60 W, 220 V and (ii) marked 100 W, 220 V. Which one of the two has a higher resistance?
4. What is efflorescence? Give an example.
5. Differentiate between tropic and nastic movements in plants, give one example of each..
6. What are magnetic lines of force? Roughly trace the magnetic field lines for a bar magnet.
7. What are the displacement reactions. Give example also.
8. What is a chemical formula? What information is conveyed by a chemical formula.
9. What is observed when:
  - (i) Dilute sulphuric acid is added to solid sodium carbonate.
  - (ii) Hot concentrated sulphuric acid is added to sulphur.
  - (iii) Sulphur dioxide is passed through lime water?Also write chemical equations to represent the chemical reaction taking place in each case.
10. Explain the following terms by giving one example of each:
  - (i) Mineral
  - (ii) Ore
  - (iii) Gangue
11. Give reasons:

- (i) Metals are regarded as electropositive elements.
- (ii) When a piece of Copper metal is added to a solution of Zinc sulphate, no change takes place, but the blue colour of Copper sulphate fades away when a piece of Zinc is placed in its solution.
- (iii) Articles made of aluminium do not corrode even though aluminium is an active metal.
12. Draw a diagram of the human respiratory system and label the following in it:  
(a) Lungs                      (b) Primary bronchus                      (c) Trachea                      (d) Larynx
13. Give reasons for the following:  
(a) The glottis is guarded by epiglottis.  
(b) The lung alveoli are covered with blood capillaries.  
(c) The wall of trachea is supported by cartilage rings
14. What are the male and female gonads in human beings? State any two functions of each of them.
15. (a) Draw a schematic diagram of a circuit consisting of a battery of five 2 V cells, a 5 ohm resistor and a plug key, all are connected in series  
(b) Calculate the electric current passing through the above circuit when the key is closed.
16. How does the strength of the magnetic field at the centre of a circular coil of wire depend upon:  
(i) the radius of the coil  
(ii) the number of turns of wire in the coil  
(iii) the strength of current flowing in the coil?
17. (a) Name the four gases commonly present in biogas.  
(b) list two advantages of using biogas over fossil fuels.
18. Dinesh is a student of class 10<sup>th</sup> standard. He went to a remote area of Rajasthan for trekking with his friends. Dinesh found that it was a sparsely inhabited area. He was surprised to know that there was still no electricity in this area. The people used kerosene oil lamps to light up their homes at night and there were no street lights. The children also had to study with kerosene lamps at night. The village farmers used diesel to run irrigation pumps. Actually there were no power transmission lines which could bring electricity to this remote area. Dinesh was really disturbed by the living conditions of the people in their part of Rajasthan. One day Dinesh gathered all the people of village in the village school. He told them that if they put pressure on their area MLAs and MPs for making available the required funds, then he could tell them about the devices to light up their homes and streets at night, play radio and television and also run irrigation pumps with electricity without there being power transmission lines. All the people agreed and Dinesh described them the devices to get electricity in their area in detail. The village people were very happy to know this and soon they got electricity in their area.
- Read the passage and answer the following questions:
- (a) What was the device described by Dinesh to the village people to obtain electricity locally?  
(b) What source of energy is made use of in this device to obtain electricity?  
(c) Why do you think this device is more appropriate for an area like Rajasthan?  
(d) What is the name of the single unit of this device?

(e) What values are shown by Dinesh in this incident?

[Value Based Question]

19. You are provided with two containers made up of copper and aluminium. You are also provided with solutions of dil. HCl, dil. HNO<sub>3</sub>, ZnCl<sub>2</sub> and H<sub>2</sub>O. In which of the above containers these solutions can be kept?

**Or**

What happens when zinc granules are treated with dilute solution of H<sub>2</sub>SO<sub>4</sub>, HCl, HNO<sub>3</sub>, NaCl and NaOH? Also write the chemical equations if reaction occurs.

20. (a) What is an 'activity series' of metals? Arrange the metals Zn, Mg, Al, Cu and Fe in a decreasing order of reactivity.  
 (b) What would you observe when you put:  
 (i) some zinc pieces into blue copper sulphate solution?  
 (ii) some copper pieces into green ferrous sulphate solution?  
 (c) Name a metal which combines with hydrogen gas. Name the compound formed.

**Or**

Describe with examples the following steps associated with the extraction of metals from their ores:

- (i) Froth-floatation process  
 (ii) Roasting of an ore  
 (iii) Calcinations of an ore
21. Explain the process of Photosynthesis in plants. List four factors which influence this process and describe how each of them affects the rate of the photosynthesis process.

**Or**

List three differences between respiration in plants and respiration in animals. Describe with a labelled diagram how gaseous exchange occurs through root hair in plants.

22. (i) State and prove the Joule's law of heating.  
 (ii) Give the commercial unit of electrical energy and relate it to Joule.  
 (iii) When 40 W, 220 V bulbs are connected in series to a source of 220 V, find the current flowing in each. If one of the bulb fuses, what will be the current drawn from the source of 220 V?

**Or**

- (a) Give reason, explain how the resistivity of the conductor varies if:  
 (i) area is halved?  
 (ii) length is doubled?  
 (iii) area is doubled?  
 (iv) both area and length are doubled?

- (b) Draw the schematic diagram of a circuit containing the following electrical components:  
 (i) a resistance    (ii) a voltmeter    (iii) an electric bulb  
 (iv) a cell    (v) lug key (open)    (vi) an ammeter
23. Calculate the electricity bill amount for a month of 30 days, if the following devices are used as specified:  
 (a) 4 bulbs of 60 W for 6 hours.  
 (b) 3 tubelights of 40 W for 8 hours.  
 (c) A refrigerator of 300 W for 24 hours.  
 (d) An electric mixer of 750 W for 1 hour.  
 (e) A TV of 100 W for 6 hours.  
 The cost per unit of electricity consumed is Rs.2.50 for first 50 units and Rs.3.00 for every unit consumed in excess of 50.

**Or**

- A 60 W bulb is connected (i) in series and (ii) in parallel with a room heater and is further connected across the mains. If 60 W bulb is now replaced by 100 W bulb in each case, will the heat produced by heater be less or more? Give reason.
24. (a) What are Magnetic field lines? How is the direction of a magnetic field at a point determined?  
 (b) Draw two field lines around a bar magnet along its length on its two sides and mark the field directions on them by arrow marks.  
 (c) List any three properties of magnetic field lines.

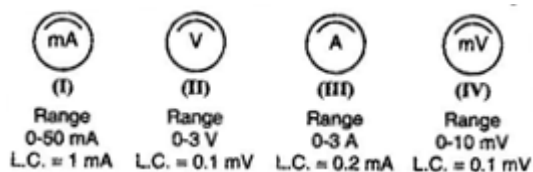
**Or**

Why is pure iron not used for making permanent magnets? Name one materials used for making permanent magnets.  
 Describe how permanent magnets are made electrically.  
 State two examples of electrical instruments made by using permanent magnets.

### Section B

25. If phenolphthalein is added to dilute HCl, then what will happen? Justify your answer also.
26. (a) Why does plant cool the atmosphere?  
 (b) Define that term also.
27. The given wire made of material resistivity ' $\rho$ ' is stretched to triple its length. Then what will be new resistivity? Justify your answer also.
28. Conc.  $H_2SO_4$  should be kept away from body because:  
 (a) it is oily liquid.  
 (b) it reacts with skin which gets burnt.  
 (c) of its pungent smell.  
 (d) it has high boiling point.

29. If we invert a gas jar of  $\text{SO}_2$  over water, the observation and conclusion will be:
- Water level rises up because  $\text{SO}_2$  is insoluble in water.
  - Water level rises up because  $\text{SO}_2$  is soluble in water.
  - There is no change in water level as  $\text{SO}_2$  is lighter than air.
  - Water level rises up because  $\text{SO}_2$  is heavier than air.
30. The thistle funnel should be dipped into conc.  $\text{H}_2\text{SO}_4$  because:
- $\text{SO}_2$  gas will come out from the thistle funnel.
  - $\text{SO}_2$  is lighter than air.
  - $\text{SO}_2$  is soluble in water.
  - $\text{SO}_2$  is pungent smelling gas.
31. Which of the following is not a part of reflex arc:
- Sensory neuron
  - Brain
  - Relay neuron
  - Spinal cord
32. Which hormone is not released from pituitary gland:
- Growth hormone
  - Oestrogen
  - Oxytocin
  - Prolactin
33. A resistor is connected to an ammeter in series and a voltmeter in parallel to a source of energy. The quantity that cannot be found directly is:
- Current
  - Potential Difference
  - Resistance
  - All of these
34. Four different measuring instruments are shown below. Out of these, the instrument that can be used for measuring current is/are the instruments labelled as:



- I and III with III more reliable of the two.
  - I and IV with IV more reliable of the two.
  - II and III with II more reliable of the two.
  - II and IV with IV more reliable of the two.
35. Choose the incorrect statement from the following regarding magnetic lines of field:
- The direction of magnetic field at a point is taken to be the direction in which the north pole of a magnetic compass needle points.
  - Magnetic field lines are closed curves.
  - In magnetic field lines are parallel and equidistant, they represent zero field strength.
  - Relative strength of magnetic field is shown by the degree of closeness of the field lines.
36. Acid rain happens because:
- Sun leads to heating of upper layer of atmosphere.
  - Burning of fossil fuels release oxides of carbon, nitrogen and sulphur in the atmosphere.
  - Electrical changes are produced due to friction amongst clouds.
  - Earth atmosphere contains acids.

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