

INSTRUCTIONS :

- ▶ Q.1 to Q.4 are very short answers. Each question is a one mark question.
- ▶ Q.5 to Q.7 are short answers. Each question is a two marks question.
- ▶ Q.8 to Q.10 are short answers. Each question is a three marks question.
- ▶ Q.11 & Q.12 are long answers. Each question is a four marks question.

1. What is the unit of resistivity?
2. Define absolute refractive index.
3. Mention any two characteristics of a good source of energy.
4. The human eye forms the image of an object at
(1) cornea (2) iris (3) pupil (4) retina
5. What is the resistance of a bulb rated 100 W, 220 V?

OR

State Ohm's law. Also write its mathematical expression.

6. If the image formed by a mirror for all positions of the object placed in front of it is always erect and diminished, what type of mirror is it? Where and why do we generally use this type of mirror?
7. Write the principle of working of an electric motor. Explain the function of brushes used in electric motor.
8. Write any two advantages and two disadvantages of hydro power plant.
9. A current of 1 A flows in a series circuit having an electric lamp and a conductor of 5Ω when connected to a 10 V battery. Calculate the resistance of the electric lamp.
Now if a resistance of 10Ω is connected in parallel with this series combination, what change (if any) in current flowing through 5Ω conductor will take place? Give reason.
10. A 5 cm tall object is placed perpendicular to the principal axis of a convex lens of focal length 20 cm. The distance of the object from the lens is 30 cm. Find:
(i) position of image (ii) nature of image (iii) size of the image formed.

OR

An object is placed between focus (F_1) and optical center of convex lens (O). Draw a labelled ray diagram to show the formation of image. State the nature, position and size of image.

11. Explain why :
(i) the planets do not twinkle?
(ii) the sun appears red at sunrise and sunset?

12. (i) Define electromagnetic induction.
- (ii) Two coils P and S are wound over the same iron core. Coil P is connected to battery and key and the coil S is connected to galvanometer. Draw a suitable diagram of this arrangement and write your observations when :
- (a) current in the coil P is started by closing the key.
- (b) current continues to flow in coil P.
- Explain the reason for each observation.

OR

- (i) Draw the diagram of a domestic electric circuit.
- (ii) What is the function of an earth wire in domestic electric circuit?

SECTION-B : CHEMISTRY**MARKS : 25****INSTRUCTIONS :**

- ▶▶ Q.13 to Q.17 are very short answers. Each question is a one mark question.
- ▶▶ Q.18 to Q.20 are short answers. Each question is a two marks question.
- ▶▶ Q.21 to Q.22 are short answers. Each question is a three marks question.
- ▶▶ Q.23 & Q.24 are long answers. Each question is a four marks question.

13. When crystals of FeSO_4 are strongly heated the residue obtained is-
- (1) Reddish brown in colour. (2) blue in colour.
(3) green in colour. (4) colourless.
14. Which of the following is not a saturated hydrocarbon?
- (1) Cyclohexane (2) Benzene (3) Butane (4) Isobutane
15. The functional group in methanol and methanal respectively are-
- (1) OH, COOH (2) CHO, OH (3) OH, CHO (4) CHO, COOH
16. The group number and period number respectively of an element with atomic number 8 is.
- (1) 6, 2 (2) 16, 2 (3) 6, 8 (4) 16, 4
17. Identify the group which is not a Dobereiner triad.
- (1) Li, Na, K (2) Be, Mg, Cr (3) Ca, Sr, Ba (4) Cl, Br, I
18. Why do ionic compounds have high melting points?
19. Which gas is usually liberated when an acid reacts with a metal? Illustrate with an example. How will you test for the presence of this gas?
- $$\text{Zn} + \text{H}_2\text{SO}_4 \rightarrow \text{ZnSO}_4 + \text{H}_2$$
20. State Mendeleev's periodic law. Write two achievements of Mendeleev periodic table.
21. Explain the following terms with one example of each
- (a) Corrosion (b) Rancidity
22. How is impure copper purified by electrolytic refining? Draw a labelled diagram to illustrate it.
23. (a) A white powder is added while baking breads and cakes to make them soft and fluffy. What is the name of the powder? What are the main ingredients in it?

- (b) A metal carbonate X on reacting with an acid gives a gas which when passed through a solution Y gives the carbonate back. On the other hand, a gas G that is obtained at anode during electrolysis of brine is passed on dry Y, it gives a compound Z, used for disinfecting drinking water. Identify X, Y, G and Z.
24. (a) Write the structural formula of ethanol. What happens when it is heated with excess of conc. H_2SO_4 at 443 K? Write the chemical equation for the reaction stating the role of conc. H_2SO_4 in this reaction.
- (b) Distinguish between esterification and saponification reaction with the help of the chemical equations for each. State one use of each (i) esters and (ii) saponification process.

SECTION-C : BIOLOGY**MARKS : 28****INSTRUCTIONS :**

- ▶▶ **Q.25 to Q.31 are very short answers. Each question is a one mark question.**
- ▶▶ **Q.32 to Q.35 are short answers. Each question is a two marks question.**
- ▶▶ **Q.36 to Q.38 are short answers. Each question is a three marks question.**
- ▶▶ **Q.39 is long answer. Question is a four marks question.**

25. Loss of reproductive capacity of women after age of 45 year is-
- (1) menstruation (2) ageing (3) menopause (4) menarche
26. Evolution is best defined by-
- (1) inheritance of acquired character (2) descent with modification
(3) struggle for existence (4) spontaneous generation
27. In a grazing food chain, primary consumers (herbivores) represent
- (1) T1 level (2) T2 level (3) T3 level (4) T4 level
28. Which one of the following green house gases is a contributor due to incomplete combustion of coal and petroleum?
- (1) Oxides of nitrogen (2) Methane
(3) Carbon monoxide (4) Carbon dioxide
29. Gigantism results due to
- (1) Excess secretion of thyroxine (2) Less secretion of growth hormone
(3) Less secretion of adrenaline (4) Excess secretion of growth hormone
30. Which of the following breaks the dormancy of seeds?
- (1) Auxin (2) GA (3) Ethylene (4) All of the above
31. Recessive gene can express only in
- (1) Homozygous condition (2) Heterozygous
(3) Both above condition (4) None of the above

32. How is small intestine designed to absorb digested food?
33. Explain a flow of energy within an ecosystem. Why is it unidirectional? Justify.
34. Explain the process of regeneration in planaria. How is this process different from reproduction?
35. Why rain harvested water stored underground has many advantages? Give any two reasons.
36. (i) The two opening of the pharynx, one leading to trachea and the other leading to oesophagus, lie very close to each other. Yet food we swallow normally does not enter into our trachea. Why?
(ii) What happens at the synapse between two neuron?
37. (a) Explain any two directional movement in plants.
(b) How is brain protected from injury and shock?
(c) Name two main parts of hind brain and state the functions of each.
38. Explain female reproductive system.
39. Explain the mechanism of breathing.

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