

**PRERNA EDUCATION  
SCIENCE CLASS 10 SAMPLE PAPER**

**Maximum Time: 3 HR**

**M.M.80**

**General Instructions :**

- (i) The question paper comprises five Sections, A, B, C, D and E. You are to attempt All the sections.**
- (ii) All questions are compulsory.**
- (iii) Internal choice is given in Sections B, C, D and E.**
- (iv) Questions number 1 and 2 in Section A are one-mark questions. They are to be answered in one word or in one sentence.**
- (v) Questions number 3 to 5 in Section B are two-marks questions. These are to be answered in about 30 words each.**
- (vi) Questions number 6 to 15 in Section C are three-marks questions. These are to be answered in about 50 words each.**
- (vii) Questions number 16 to 21 in Section D are five-marks questions. These are to be answered in about 70 words each.**
- (viii) Questions number 22 to 27 in Section E are based on practical skills. Each question is a two-marks question. These are to be answered in brief.**

1. Define the term electrical resistivity of a material.
2. List two main components of an ecosystem.
3. What are ionic compounds ? Why do ionic compounds not conduct electricity in the solid state ?
4. How do auxins promote the growth of a tendril around a support ?

OR

What is a nerve impulse ? State the direction followed by a nerve impulse while travelling in the body of an organism.

5. Why is the colour of the clear sky blue ?
6. State the effect of concentration of  $H^+(aq)$  ions on the nature of the solution. Do basic solutions also have  $H^+(aq)$  ions ? If yes, then why are these basic ?
7. Out of three metals P, Q and R, P is less reactive than Q and R is more reactive than P and Q both. Suggest an activity to arrange P, Q and R in order of their decreasing reactivity.

OR

Name the ore of mercury. With the help of balanced chemical equations, explain the process of extraction of mercury from its ore.

8. "Atomic number of an element is considered to be a more appropriate parameter than its atomic mass for a chemist." Take the example of the element X (atomic number 13) to justify this statement.
9. List four functions of the human heart. Why is double circulation necessary in the human body ?
10. Explain the ways in which glucose is broken down in absence or shortage of oxygen.
11. List in tabular form three distinguishing features between cerebrum and cerebellum.

12. Explain the following :

- (a) Speciation
- (b) Natural Selection

OR

Mendel, in one of his experiments with pea plants, crossed a variety of pea plant having round seeds with one having wrinkled seeds. State Mendel's observations giving reasons of F1 and F2 progeny of this cross. Also, list any two contrasting characters, other than round seeds of pea plants that Mendel used in his experiments.

13. What is atmospheric refraction ? Explain with the help of a labelled diagram that the position of a star as seen by us is not its true position.

OR

When do we consider a student sitting in the class to be myopic ? List two causes of this defect. Explain using a ray diagram how this defect of eye can be corrected.

14. Name two energy sources that you would consider to be renewable. Give justification for your choices. Can these energy sources be pollution free ? List two reasons in support of your answer.

15. Why are forests considered "biodiversity hot spots" ? Suggest four approaches towards the conservation of forests.

16. (a) What is a double displacement reaction ? Explain with an example.

(b) A small amount of quick lime is added to water in a beaker.

- (i) Name and define the type of reaction that has taken place.
- (ii) Write balanced chemical equation for the above reaction and the chemical name of the product formed.
- (iii) List two main observations of this reaction.

OR

(a) Design an activity to demonstrate the decomposition reaction of lead nitrate.

(b) Draw labelled diagram of the experimental set-up. List two main observations.

(c) Write balanced chemical equation for the reaction stating the physical state of the reactant and the products.

17. (a) Distinguish between esterification and saponification reactions with the help of chemical equation for each.

(b) Write an activity to show the formation of an ester in a school laboratory.

18. (a) What is reproduction ? List its two types.

(b) How are the modes of reproduction different in unicellular and multicellular organisms ?

OR

(a) What are Sexually Transmitted Diseases (STD) ? List two viral and two bacterial STDs.

(b) What is contraception ? List three reasons for adopting contraceptive methods.

19. (a) List four characteristics of the images formed by plane mirrors.

(b) A 5 cm tall object is placed at a distance of 20 cm from a concave mirror of focal length 30 cm. Use mirror formula to determine the position and size of the image formed.

20. (a) Three resistors of resistances  $R_1$ ,  $R_2$  and  $R_3$  are connected (i) in series, and (ii) in parallel. Write expressions for the equivalent resistance of the combination in each case.

(b) Two identical resistors of  $12 \Omega$  each are connected to a battery of 3 V. Calculate the ratio of the power consumed by the resulting combinations with minimum resistance and maximum resistance.

OR

(a) Write the relation between resistance and electrical resistivity of the material of a conductor in the shape of a cylinder of length ' $l$ ' and area of cross-section ' $A$ '. Hence derive the S.I. unit of electrical resistivity.

(b) Resistance of a metal wire of length 5 m is 100 ohm. If the area of cross-section of the wire is  $3 \times 10^{-7} \text{ m}^2$ , calculate the resistivity of the metal.

21. (a) Name and state the rule to determine the direction of force experienced by a current carrying straight conductor placed in a uniform magnetic field which is perpendicular to it.

(b) Draw a labelled diagram of an electric motor.

22. What is observed after about 1 hour of adding the strips of copper and aluminium separately to ferrous sulphate solution filled in two beakers? Name the reaction if any change in colour is noticed. Also, write chemical equation for the reaction.

OR

A student wants to study a decomposition reaction by taking ferrous sulphate crystals. Write two precautions he must observe while performing the experiment.

23. List the conclusions you will draw while studying the following properties of ethanoic acid :

(a) Odour

(b) Solubility in water

(c) Effect on litmus paper

(d) Reaction with sodium hydrogen carbonate

24. A student has set up an apparatus to show that "CO<sub>2</sub> is released during respiration". After about 1 hour he observes no change in the water level in the delivery tube. Write two possible reasons for the failure of the experiment.

25. In the experiment of preparing a temporary mount of a leaf peel to observe stomata, we use two liquids other than water. Name these two liquids and state when and why these liquids are used.

OR

List four precautions in proper sequence which we observe while preparing a temporary mount of a leaf peel.

26. List in proper sequence the steps of the experiment for determining the approximate focal length of a given concave mirror by obtaining the image of a distant object.

OR

A student has to trace the path of a ray of light passing through a rectangular glass slab for four different values of angle of incidence.

(a) Write two important precautions for this experiment.

(b) List two conclusions the student will draw based on his experiment.

27. Consider the scale of a voltmeter shown in the diagram and answer the following questions :

(a) What is the least count of the voltmeter ?

(b) What is the reading shown by the voltmeter ?

(c) If this voltmeter is connected across a resistor of  $20\ \Omega$ , how much current is flowing through the resistor ?

