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. Name two industries based on forest produce.
2. Why are the heating elements of electric toasters and electric irons made of an alloy rather than a pure metal ?
3. Write the molecular formula of ethene and draw its electron dot structure.
4. Give reasons :
   (a) Platinum, gold and silver are used to make jewellery.
   (b) Metals like sodium and potassium are stored under oil.

   OR

   Silver articles become black when kept in open for some time, whereas copper vessels lose their shiny brown surfaces and gain a green coat when kept in open. Name the substances present in air with which these metals react and write the name of the products formed.

5. The absolute refractive index of Ruby is 1·7. Find the speed of light in Ruby. The speed of light in vacuum is $3 * 10^8$ m/s.
6. On heating blue coloured powder of copper (II) nitrate in a boiling tube, black copper oxide, O2 and a brown gas X is formed.
   (a) Identify the type of reaction and the gas X.
   (b) Write balanced chemical equation of the reaction.
   (c) Write the pH range of aqueous solution of the gas X.
7. (a) While diluting an acid, why is it recommended that the acid should be added to water and not water to the acid ?
   (b) Dry hydrogen chloride gas does not change the colour of dry litmus paper. Why ?

   OR

   How is sodium hydroxide manufactured in industries ? Name the process. In this process a gas X is formed as by-product. This gas reacts with lime water to give a compound Y, which is used as a bleaching agent in the chemical industry. Identify X and Y and write the chemical equation of the reactions involved.
8. What are amphoteric oxides ? Give an example. Write balanced chemical equations to justify your answer.
9. What is a homologous series of carbon compounds ? Give an example and list its three characteristics.
10. List in tabular form three distinguishing features between autotrophic nutrition and heterotrophic nutrition.
11. What is transpiration ? List its two functions.

    OR

    (a) What is translocation ? Why is it essential for plants ?
    (b) Where do the substances in plants reach as a result of translocation ?
12. What is carpel ? Write the function of its various parts.

13. A student holding a mirror in his hand, directed the reflecting surface of the mirror towards the Sun. He then directed the reflected light on to a sheet of paper held close to the mirror.
(a) What should he do to burn the paper ?
(b) Which type of mirror does he have ?
(c) Will he be able to determine the approximate value of focal length of this mirror from this activity ? Give reason and draw ray diagram to justify your answer in this case.

OR

A 10 cm tall object is placed perpendicular to the principal axis of a convex lens of focal length 12 cm. The distance of the object from the lens is 18 cm. Find the nature, position and size of the image formed.

14. What are solar cells ? Explain the structure of solar panel. List two principal advantages associated with solar cells.

15. Write the essential function performed by ozone at the higher levels of the Earth's atmosphere ? How is it produced ? Name the synthetic chemicals mainly responsible for the drop of amount of ozone in the atmosphere. How can the use of these chemicals be reduced ?

16. (a) List any three observations which posed a challenge to Mendeleev's Periodic Law.
(b)How does the metallic character of elements vary on moving from
(i) left to right in a period,
(ii) from top to bottom in a group of the Modern Periodic Table ? Give reason for your answer.

OR

The electrons in the atoms of four elements A, B, C and D are distributed in three shells having 1, 3, 5 and 7 electrons respectively in their outermost shells. Write the group numbers in which these elements are placed in the Modern Periodic Table. Write the electronic configuration of the atoms of B and D and the molecular formula of the compound formed when B and D combine.

17. (a) Why is the use of iodised salt advisable ? Name the disease caused due to deficiency of iodine in our diet and state its one symptom.
(b) How do nerve impulses travel in the body ? Explain.

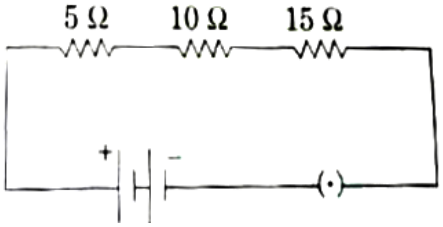
OR

What is hydrotropism ? Design an experiment to demonstrate this phenomenon.

18. (a) What are homologous structures ? Give an example.
(b) ''The sex of a newborn child is a matter of chance and none of the parents may be considered responsible for it.'' Justify this
statement with the help of a flow chart showing sex-determination in human beings.

19. When do we consider a person to be myopic or hypermetropic ? List two causes of hypermetropia. Explain using ray diagrams how the defect associated with hypermetropic eye can be corrected.

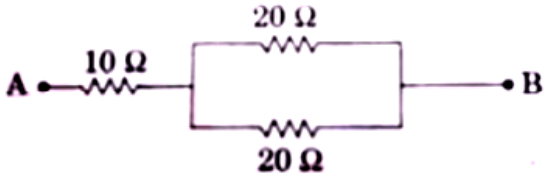
20. (a) How will you infer with the help of an experiment that the same current flows through every part of a circuit containing three resistors in series connected to a battery ?
(b) Consider the given circuit and find the current flowing in the circuit and potential difference across the 15 Ω resistor when the circuit is closed.



OR

(a) Three resistors R1, R2 and R3 are connected in parallel and the combination is connected to a battery, ammeter, voltmeter and key. Draw suitable circuit diagram and obtain an expression for the equivalent resistance of the combination of the resistors.

(b) Calculate the equivalent resistance of the following network :



21. Draw the pattern of magnetic field lines produced around a current carrying straight conductor passing perpendicularly through a horizontal cardboard. State and apply right-hand thumb rule to mark the direction of the field lines. How will the strength of the magnetic field change when the point where magnetic field is to be determined is moved away from the straight conductor ? Give reason to justify your answer.

22. A teacher provided acetic acid, water, lemon juice, aqueous solution of sodium hydrogen carbonate and sodium hydroxide to students in the school laboratory to determine the pH values of these substances using pH papers. One of the students reported the pH values of the given substances as 3, 12, 4, 8 and 14 respectively. Which one of these values is not correct ? Write its correct value stating the reason.

OR

What would a student report nearly after 30 minutes of placing duly cleaned strips of aluminium, copper, iron and zinc in freshly prepared iron sulphate solution taken in four beakers ?

23. What is observed when a pinch of sodium hydrogen carbonate is added to 2 mL of acetic acid taken in a test tube ? Write chemical equation for the reaction involved in this case.

24. List in proper sequence four steps of obtaining germinating dicot seeds.

OR

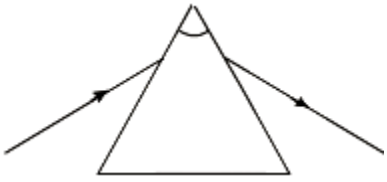
After examining a prepared slide under the high power of a compound microscope, a student concludes that the given slide shows the various stages of binary fission in a unicellular organism. Write two observations on the basis of which such a conclusion may be drawn.

25. List four precautions which a student should observe while preparing a temporary mount of a leaf peel to show stomata in his school laboratory.

26. Draw the path of a ray of light when it enters one of the faces of a glass slab at an angle of nearly 45°. Label on it (i) angle of refraction, (ii) angle of emergence and (iii) lateral displacement.

OR

A student traces the path of a ray of light through a glass prism as shown in the diagram, but leaves it incomplete and unlabelled. Redraw and complete the diagram. Also label on it /_i, /_e, /_r and /_D.



27. The current flowing through a resistor connected in a circuit and the potential difference developed across its ends are as shown in the diagram by milliammeter and voltmeter readings respectively :
(a) What are the least counts of these meters ?
(b) What is the resistance of the resistor ?