INDIAN SCHOOL SOHAR

STD X   **PERIODIC TEST- III**   **Time: 3Hours**

 4-1-18   **SCIENCE**   **Marks: 80**

General Instructions:

*(i) The question paper comprises of two Sections, **A** and **B**. You are to attempt both the sections.*

*(ii) The question paper consists of 27 questions. **All** questions are **compulsory.***

*(iii) All questions of Section, **A** and all questions of Section **B** are to be attempted separately.*

*(iv) Question numbers 1to2 in Section **A** are one- mark questions. These are to be answered in one word or one sentence.*

*(v) Question numbers 3 to5 in Section **A** are two- marks questions. These are to be answered in 30 words each.*

*(vi) Question numbers 6 to 15 in Section **A** are three- marks questions. These are to be answered in about 50 words each.*

*(vii) Question numbers 16 to 21 in Section **A** are five- marks questions. These are to be answered in about 70 words each.*

*(viii) Question numbers 22 to 27 in Section **B** are two- marks questions based on practical skills. These are to be answered in brief.*

(ix) There is no overall choice. However, an internal choice is provided in two questions of 3 marks each and one question of 5 marks.

(x) Wherever necessary, the diagrams drawn should be neat and properly labelled.

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1. The refractive index of water is 1.33 and the speed of light in air is 3×10^8 m/s. Calculate the speed of light in water?   1

2. What are the two kinds of natural resources?   1

3. a) What is electromagnetic induction?

   b) Name two devices which work on the principle of electromagnetic induction.   2

4. Which of the following will give addition reaction and why? C_4H_{10}, C_2H_6, CH_4, C_3H_6 2

5. a) Arrange the following organisms in the form of a food chain:-   2

       Insect, Snake, Grass, Hawk, Frog

   b) Which of these organisms will have highest concentration of non-biodegradable chemicals?

   c) Name the phenomenon.

6. Draw labelled diagram of an electric motor. Explain its principle. What is the function of a split ring in an electric motor?   3

7. Draw a circuit diagram of an electric circuit containing a cell, a key, an ammeter, a resistor of 2Ω in series with a combination of two resistors (4 Ω each) in parallel and a voltmeter across the parallel combination. Will the potential difference across the 2 Ω resistor be the same as that across the parallel combination of 4 Ω resistors? Give reason.   3

8. An organic compound 'A' is an essential constituent of wine and beer. Oxidation of 'A' yields an organic acid 'B' which is present in vinegar. Name the compounds 'A' and 'B'. Write their structural formula. What happens when 'A' and 'B' react in the presence of an acid catalyst? Write the chemical equation of the reaction.   3

9. (a) Name the device used to convert

       (i) Solar energy into electricity   and   (ii) Solar energy into heat.

   (b) Explain the principle of working of a windmill.   3

10. a) State any three limitations of Mendeleev's classification. 3
   b) Which two criteria did Mendeleev use to classify the elements in his periodic table.
   c) State Mendeleev's Periodic Law.

OR

   (a) State modern periodic law.
   (b) How many groups and periods are present in the modern periodic table?
   (c) State how the problem of placing isotopes has been solved in this periodic table?

11. What is chipko movement? How did this movement ultimately benefit the local population
    and the environment? (two points) 3

12. a) What happens when the egg/ovum is not fertilised? 3
    b) Mention the term for surgical method of contraception in (i) Males   (ii) Females.

13. Explain, briefly the factors that lead to the rise of new species. (any three) 3

14. a) Explain, the cause of bending of the shoot of a plant towards the light . 3
    b) Draw a neat diagram of the human excretory system and label the part that:-
      i) produces urine   ii) releases urine to outside the body iii) connects urine producing
      area to the releasing area .

15. What are the main events which occur during the process of photosynthesis ? 3

OR

   Do as directed :- a) Give an example for (i) unisexual flower   (ii) bisexual flower.
                  b) STDs caused by (i) Bacteria   (ii) Virus. (1 each)
                  c) Internal energy reserve in (i) Plants (ii) Animals.

16. Suppose you have three concave mirrors A, B and C of focal lengths 10cm, 15cm, and 20cm. 5
    For each concave mirror you perform the experiment of image formation for three values of
    object distance of 10cm, 20cm and 30 cm. Giving reason answer the following.
    a) For the three object distances, identify the mirror/ mirrors which will form an image of
       magnification of -1.
    b) Out of the three mirrors identify which would be preferred to be used for shaving purpose /
       make up.
    c) For the mirror B draw ray diagram for image formation for object distances 10cm and 20cm.

17. a) What is myopia? List two causes for the development of this defect. How can this defect be 5
      corrected using a lens? Draw ray diagrams to show the image formation in case of
      (i) defective eye, and (ii) corrected eye.
    b) The far point of a myopic person is 80 cm in front of the eye. What is the nature and power of
       the lens required to correct the problem.

OR

    a) What is hypermetropia? State two causes of hypermetropia. With the help of ray diagrams
       show: (i) defective eye, and (ii) corrected eye.
    b) The near point of a hypermetropia eye is 1m. What is the power of the lens required to correct
       this defect? Assume that the near point of the normal eye is 25cm.

18. Name the main product formed when: 5
    (i)   Ethanoic acid is treated with sodium carbonate
    (ii)   Ethanol is heated with alkaline $KMnO_4$ solution
    (iii)   Ethyl ethanoate is treated with NaOH solution.
    Write the balanced chemical equation for each of the above reactions.

2

19. A part of the periodic table has been shown below: 5

Group→	1	2	3			13	14	15	16	17	18
Period↓											
1											
2	A	C								E	G
3	B					D				F	

Answer the following questions on the basis of position of elements in the above table.
(a) Which element is a noble gas? Give reason.
(b) Which element is most electronegative? Give reason.
(c) Write the electronic configuration of (i) B and (ii) E.
(d) What may be the number of valence electrons of D?
(e) Among A and B which is more metallic? Give reason.

20. a) Work out a cross between pure breeding tall pea plant with pure breeding dwarf pea plant.
   b) Give the phenotypic and genotypic ratio of this cross.
   c) Why did Mendel select pea plant for his experiment? (Any 2 points) 5

21. a) Explain with the help of a diagram, how pollen grains after landing on the stigma of a flower help male germ cells to reach the female germ cell. 5
   (b) Differentiate between self-pollination and cross-pollination. (Any 2 points)

PART B

22. While determining focal length of a concave mirror, four students A, B, C and D obtain the image of a distant tree on a screen and make the following observation: 2
   (A) Image is virtual , erect and small
   (B) Image is real , erect and small
   (C) Image is real , inverted and small
   (D) Image is virtual , inverted and small
   Who has made the correct observation, why?

23. Trace the path of a ray of light passing through a rectangular glass slab. Label the angle of incidence, angle of refraction, the angle of emergence and lateral displacement. 2

24. The colourless solution of potassium iodide and lead acetate are mixed when a coloured precipitate is formed. Answer the following question: 2
   (i)   What kind of chemical reaction takes place?
   (ii)   Write a balanced chemical equation for the reaction.
   (iii)   What is the formula and the colour of precipitate?

25. A clean strip of magnesium is placed in dilute copper sulphate solution for 20 minutes. 2
   (i)   What is deposited on magnesium strip and what is its colour?
   (ii)   What colour change takes place in the reaction mixture?

26. Amongst $Fe(OH)_3$, $Pb(OH)_3$, $NaOH$ and KOH which are bases and which are alkalis and why? 2

27. Amoeba reproduces by binary fission. Represent the correct sequence of stages with a neat labelled diagram. 2

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