ST. XAVIER'S SENIOR SECONDARY SCHOOL, DELHI - 110054
Pre-Board Examination 2018 in **SCIENCE**

Std. 10 | **Set 2** | **Max. Marks : 80**
08-01-2018 | **Time : 3 hrs.**

General Instructions:

i) The question paper comprises two sections, A and B. You are to attempt both the sections.
ii) All questions are compulsory.
iii) All questions of Section-A and B are to be attempted separately.
iv) There is an internal choice in three questions of three marks each, two questions of five marks each and one question of two marks each.
v) Question numbers 1 and 2 in Section-A are one mark question. They are to be answered in one word or in one sentence.
vi) Question numbers 3 to 5 in Section- A are two marks questions. These are to be answered in 30 words each.
vii) Question numbers 6 to 15 in Section-A are three marks questions. These are to be answered in about 50 words each.
viii) Question numbers 16 to 21 in Section-A are 5 marks questions. These are to be answered in 70 words each.
ix) Question numbers 22 to 27 in Section- B are based on practical skills. Each question is a two marks question. These are to be answered in brief.

SECTION - A

1. Name the functional group present in
   a) $CH_3CH_2COCH_3$ b) $CH_3CH_2CH_2OH$ (1)

2. State one advantage of using disposable paper cups over disposable plastic cups. (1)

3. a) In the refining of silver, the recovery of silver from silver nitrate solution involved displacement by copper metal. Write down the chemical equation involved.
   b) What is the colour of Ferrous sulphate crystals? How does this colour change after heating? (2)

4. a) Write an equation for the reaction of Potassium with water.
   b) What are amphoteric oxides? Give example. (2)

5. Define refractive index of any medium. A ray of light enters from air to kerosene. Calculate speed of light in kerosene if the refractive index of kerosene is 1.41. Draw a ray diagram to show refraction at the interface. (2)

6. a) Give any two differences between resistance and resistivity.
   b) Define the SI unit of electric charge.
   c) Why do we use tungsten in electric bulb? (1+1+1)

7. a) Mention the purpose of blackening the interior of solar cooker.
   b) Give any two advantages of nuclear energy.
   c) What is the composition of bio gas? (1+1+1)

   (OR)

   Explain the three different ways to harness energy from ocean. Write an advantage and disadvantage. (3)

8. A student is unable to see clearly the words written on the blackboard placed at distance 4m approximately from him. Name the defect of vision he is suffering from? What are the causes of this defect? Give the ray diagram for the defect of vision and its correction. (3)

9. a) What is meant by solenoid? How does a current carrying solenoid behave? Draw the magnetic field lines for a current carrying solenoid.
   b) Explain the term "short circuiting". (2+1)

10. a) Why does HCl show acidic character in aqueous solution while solution of glucose do not show acidic character?
    b) What is baking powder? How does it make cake soft and spongy?
    c) Explain why an aqueous solution of ammonium chloride is acidic in nature?

    (OR)

    a) Differentiate between calcination and roasting. (2 points)

b) Explain the process by which the metal is obtained from its molten chloride.
c) What are alloys? How are they made? (3)

11. a) How does atomic size of elements vary on moving from top to bottom in a group? Give reason.
b) Consider the position of following elements in a part of periodic table and answer the given questions:

Group 1	Group 2	Group 16	Group 17	Group 18
--	--	--	E	G
A	B	C	--	--
--	--	--	--	H
--	--	D	F	--

i) Name the element which is metal with valency two.
ii) Which one is bigger in size A or C?
iii) What type of ion is formed by element D?
iv) Write the common name for the family to which the element E and F belong. (3)

12. a) Name a plant growth hormone which is synthesized at the tips of root and shoot. Why do roots always grow downwards and shoots grow upwards?
b) Name the hormone secreted by thyroid gland and state its function. (3)

13. a) Leaves of healthy potted plant were coated with Vaseline. Will this plant remain healthy for long? Give reasons.
b) State the function of guard cell.
c) Why do veins have thin walls as compared to arteries? (3)

14. a) Mendel in one of his experiments with pea plants crossed a variety having round seeds with one having wrinkled seeds. Write his observation giving reasons of F1 and F2 progeny.
b) Differentiate between acquired and inherited traits. Give two points.

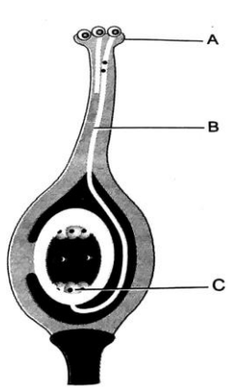
(OR)

Differentiate between the following :
a) Dominant and recessive traits
b) Artificial and natural selection.
c) Homologous and Analogous organs. (3)

15. a) List any two causes for the failure of sustained availability of ground water.
b) Why is replenishment of forests necessary? Give two points. (3)

16. i) Draw the diagram of sectional view of heart and label the following parts.
a) The chamber of heart that pumps out de-oxygenated blood;
b) The blood vessel that carries away oxygenated blood from the heart;
c) The blood vessel that receives de-oxygenated blood from the lower part of our body;
d) Part which prevents back flow of blood.
ii) Why is diffusion insufficient to meet the oxygen requirement of multi cellular organisms?
iii) What would happen if green plants disappeared from the earth? (5)

17. i) Name the parts a, b and c in the diagram and **write their function**.



ii) List two reasons for the appearance of variation among the progeny found by sexual reproduction.
iii) What is double fertilization?

(OR)

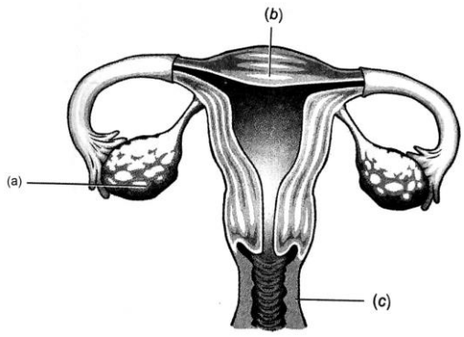
i) In the figure given below, label the parts and mention their functions:

a) Production of egg;

b) Site of fertilization;

c) Implantation of zygote;

d) Entry of the sperms.



ii) What will happen if (a) egg does not get fertilized and (b) egg gets fertilized? (5)

18. a) Why do ionic compounds have rigid structure?
b) Name the cathode and anode used in the electrolytic refining of impure copper.
c) Write the constituent element of solder alloy. What is its use?
d) Write the steps for extracting metals placed low in the activity series taking suitable example. (5)

19. a) What is meant by denatured alcohol?
b) Which of the following hydrocarbons undergo addition reaction:
C_3H_8, C_3H_6, C_2H_6, C_4H_6
c) Explain the formation of scum when hard water is treated with soap.
d) An organic compound A of molecular formula C_2H_6O on heating with conc. Sulphuric acid gives compound B. Compound B on reduction in presence of Ni as a catalyst gives compound C. Name compounds A, B and C. Write chemical equation for the conversion of A in to B.

(OR)

a) Write any two disadvantages of detergents over soaps.
b) Draw the structure of possible isomers of butane, C_4H_{10}.
c) Why is reaction between methane and chlorine in the presence of sunlight considered a substitution reaction?
d) An organic compound 'P' is a constituent of wine. 'P' on reacting with acidified $K_2Cr_2O_7$ forms another compound 'Q'. When a piece of metallic sodium is added to 'Q' a gas 'R' evolves which burns with a pop sound. Identify P, Q and R and write the chemical equation for the reaction between 'Q' and metallic sodium. (5)

20. a) A student wants to project the image of a candle flame on screen 80cm in front of mirror by keeping candle at a distance of 20 cm from pole. Which type of mirror he should use? Find magnification of image formed. Define magnification. Draw a ray diagram to show image formation.
b) A lens has power of -5D. At what distance from lens 5cm tall object be placed to form image at 15cm from the lens. Also find the size of image. (3+2)

21. a) State Joules law of heating. Calculate heat dissipated in 4 ohm resistor in 5 sec in an electrical circuit consisting of 2 resistors of 2 and 4 ohm connected in series to 6 V battery.
b) Differentiate between an open circuit and a closed circuit. Draw a circuit diagram to show connections of three resistors of resistances 10Ω, 10Ω & 20Ω to a source of 2.5 V, key, ammeter and voltmeter such that voltmeter reads 2V. (2+3)

SECTION - B

22. Draw a ray diagram to trace the path of ray of light striking the surface of rectangular glass slab at an angle of 60°. Calculate angle of refraction and angle of emergence. Given refractive index of glass is 1.5. (2)

23. a) What do you mean by equivalent resistance in series combination and parallel combination?

    b) In an experiment of ohm's law, two resistances $R1$, R_2 ($R1 < R_2$) and their series combination and parallel combination are connected in turn across a voltmeter. Sketch respective voltage versus current graph.

(OR)

23. The values of current I flowing in a given resistor for the corresponding values of potential difference V across the resistor are given below:

I (ampere)	0.5	1.0	2.0	3.0	4.0
V (volt)	1.6	3.4	6.7	10.2	13.2

Plot a graph between V and I and calculate the resistance of the resistor. (2)

24. A student takes 2 ml acetic acid in a dry test tube and adds a pinch of sodium hydrogen carbonate to it. List any two observations he would make.
Write a balanced chemical equation also. (2)

25. Reenu was given four unknown colourless samples A, B, C and D. She was asked to test their pH with pH paper and observed the following results:
A - Light green B - Dark red C - Light orange D - Dark blue
Arrange them in increasing order of pH samples. State reason for the same. (2)

26. Explain the mode of reproduction in yeast. Draw neat and labelled diagram of it. (2)

27. What are two types of seeds? Differentiate between them by giving examples. (2)

-x-x-x-x-x-x-