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

Std. 10 | **Set 1** | **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. Write the name and structure of an aldehyde with four carbon atoms in its molecule. (1)

2. Why should bio-degradable and non-biodegradable waste be discarded in two separate dustbins? (1)

3. a) Write an equation for decomposition reaction where energy is supplied in the form of light.
   b) Give an example of a reaction which is a double displacement reaction as well as a precipitation reaction. (2)

4. a) Write equation for the reaction of iron with steam.
   b) Show the formation of $MgCl_2$ by transfer of electrons. (2)
   (Atomic No. Mg - 12, Cl - 17)

5. State Snell's law. If refractive index of glass and water are 3/2 and 4/3, respectively and speed of light in glass is $2x10^8$ m/s then calculate the speed of light in water. (2)

6. a) What would be the change in resistivity if the wire of length 'l' and area 'A' is doubled on itself?
   b) Give any two properties of electric charge.
   c) Why do we use nichrome in heating appliances? (1+1+1)

7. a) What is the purpose of glass sheet in solar cooker?
   b) Give any two disadvantages of nuclear energy.
   c) What is slurry? Where is it used? (1+1+1)

   (OR)

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

8. a) What is the power of accommodation of human eye. Give its related diagrams to show accommodation of eye while seeing the far off and nearby objects.
   b) A person needs spectacles for reading newspaper. Name the defect he is suffering from. What are the causes of this defect and how can this defect be corrected? (2+1)

9. a) Describe activity with a well labeled diagram to show that a current carrying conductor experience force in a uniform magnetic field. State the rule to determine the direction of force.
   b) Explain the term "overloading of an electric circuit" (2+1)

10. a) Why does dry HCl gas not change the colour of the dry litmus paper?
    b) Fresh milk has a pH of 6.When it changes in to curd, will its pH value decrease or increase and why?

c) What is meant by water of crystallization? Give the formula for hydrated copper sulphate.

(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) What were the two criteria used by Mendeleev creating his periodic table?
b) Consider the position of following elements in a part of periodic table and answer the given questions:

Group 12	Group 13	Group 16	Group 17	Group 18
--	--	--	E	G
A	B	C	--	--
--	--	--	--	H
--	--	D	F	--

i) What is valency of C?
ii) Which one is more reactive element E or F?
iii) Write the formula of compound formed between B and D.
iv) Write the common name for the family to which the elements G and H belong. (3)

12. What is phototropism? Describe an activity to demonstrate phototropism. (3)

13. a) Write one feature which is <u>common</u> to each of the following pairs of terms or organs.
i) Glycogen and Starch; ii) Gills and lungs;
iii) Chlorophyll and hemoglobin; iv) Arteries and veins.
b) Mention the role of <u>Pepsin</u> and <u>Villi</u> in digestion. (3)

14. In a cross between plants with <u>pink</u> flowers and plants with <u>white</u> flowers the offspring of F1 generation <u>all had pink flowers</u>. When the F1 generation was self crossed, it was observed in the F2 generation that out of 100, 75 flowers were pink. Make a cross and answer the following.
a) What are the genotypes of F1 progeny?
b) What is ratio of pink and white flowers in F2 generation?

(OR)

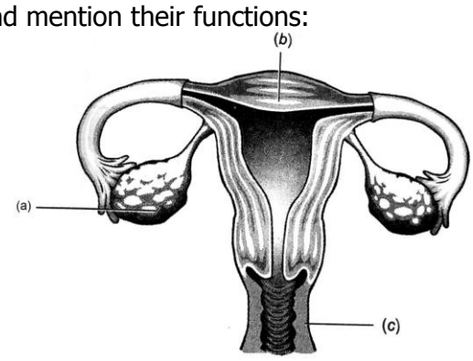
Differentiate between the following :
a) Acquired and inherited traits.
b) Artificial and natural selection.
c) Homologous and Analogous organs. (3)

15. Why forests are considered bio diversity hot spots? List two ways in which an individual can contribute effectively to the management of forests and wildlife. (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) In the figure given below, label the parts and mention their functions:

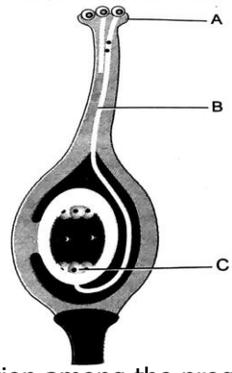
a) Production of egg;
b) Site of fertilization;
c) Implantation of zygote;
d) Entry of the sperms.



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

(OR)

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? (5)

18. a) Why do metals not evolve hydrogen gas on reacting with nitric acid?
    b) Write a chemical equation to illustrate the use of aluminium metal for joining cracked railway lines.
    c) What is 24 carat gold? Name the metal added to convert it in to 18 carat gold.
    d) Draw neat and labelled diagram for electrolytic refining of copper metal. (5)

19. a) What is vinegar? What is its use?
    b) Select the hydrocarbons which are the members of the same homologous series. Give the name of the series also : C_3H_8, C_6H_{10}, C_8H_{16}, C_4H_6
    c) How does micelle formation take place when soap is added to water?
    d) An organic compound A is a constituent of wine and beer. Compound A on heating with alkaline. $KMnO_4$ gives another compound B, which turns blue litmus to red. Compound A reacts with compound B in presence of hot and conc. sulphuric acid to give compound C. Identify compounds A and B. Write the chemical equation involved when compound A reacts with compound B to give compound C.

(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 80 cm 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) Find power and nature of lens used to get three times erect image at a distance of 30cm from it. (3+2)

21. a) Define power of an electrical appliance. Establish a relation for power in terms of current, potential difference and resistance.
    b) A torch bulb is rated as 2.5V; 750 mA. Calculate its power, resistance and electrical energy consumed if bulb is lighted for 40 minutes. How do power and resistance change if voltage across the bulb is changed to 5V? (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 30°. 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 current versus voltage 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. How will you test in the laboratory, whether the given sample of water is hard or soft? Name two salts that make the water hard. (2)

25. Solutions of Ferrous Sulphate, Zinc sulphate, Copper Sulphate and Aluminium Sulphate were taken separately in four test tubes and Iron nail was placed in each of the solutions. After some time what will be the colour change in each test tube. (2)

26. What kind of reproduction is seen in amoeba? How will you identify it as different for an extension for pseudopodia? (2)

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

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