## SAMPLE QUESTION PAPER -II
## CLASS X (CBSE)
## Science - Term 2 - Part Test
## (2021-22)

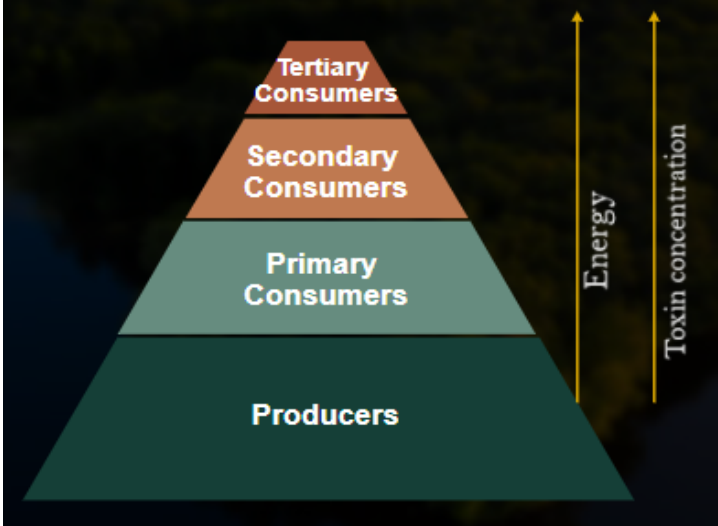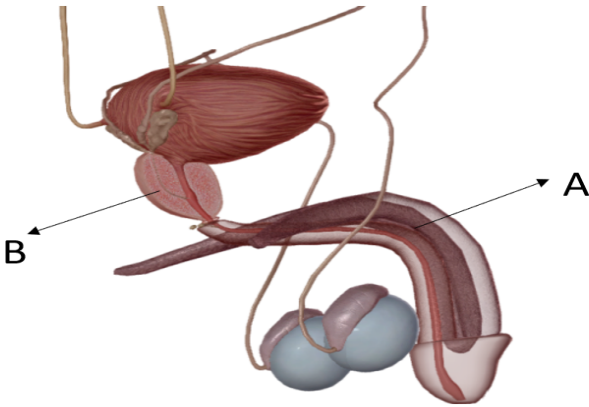**Max. Marks: 40**                                                          **Time allowed: 2 hrs**
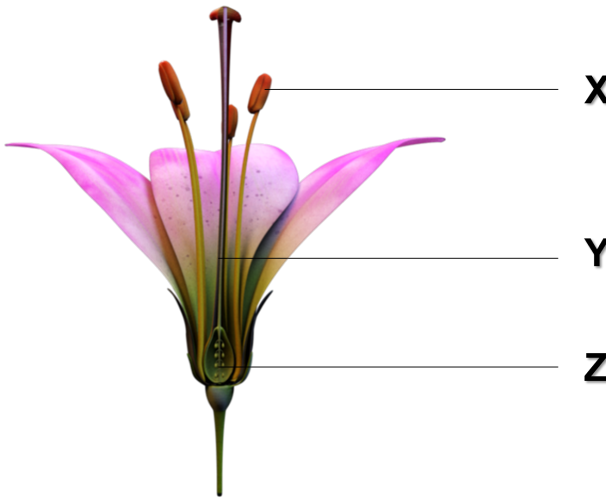
**General Instructions:**

1. All questions are compulsory.
2. The question paper has 15 questions divided into three sections A, B and C.
3. Section – A has 7 questions of 2 marks each;
   Section – B has 6 questions of 3 marks each; and
   Section – C has 2 case based questions of 4 marks each.
4. Internal choices have been provided in some questions. A student has to attempt only one of the alternatives in such questions.
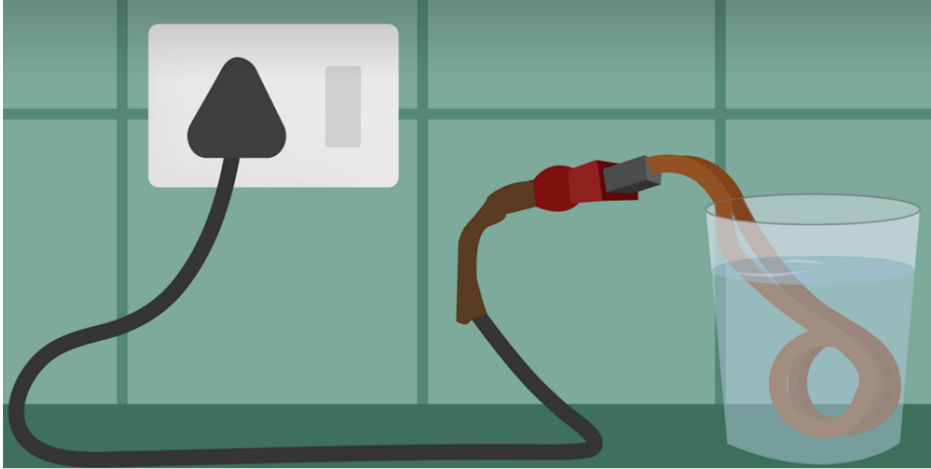
| **Section - A** | | |
|---|---|---|
| 1 | Observe the table given below and answer the following question:<br><br>| **Group 2** | **Group 17** |<br>|---|---|<br>| Be | F |<br>| Mg | Cl |<br>| Ca | Br |<br><br>a) Which element has the highest metallic character, calcium or bromine?<br>b) If 'X' and 'Y' are the number of valence electrons for beryllium and fluorine respectively, find the value of 'X + Y'. | 2 |
| 2 | Identify the group and period of element that has:<br>a) two shells, both of them are completely filled with electrons.<br>b) twice as many electrons in its second shell as its first shell. | 2 |
| 3 | If $5 \times 10^{17}$ electrons pass through the cross-section of a body in 1 s, then find the:<br>a) Total charge through the cross-section<br>b) Electric current<br><div align="center">**OR**</div><br>Calculate the amount of work required in moving $5 \times 10^{20}$ electrons across two points of a wire with a potential difference of 8 V. | 2 |

| | | |
|---|---|---|
| 4 | When the potential difference between the terminals of an electric heater is 30 V, then it draws a current of 3 A from the source. What current will the heater draw, if the potential difference is increased to 120 V. | 2 |
| 5 | Observe the diagram given below:<br><br>The diagram shows an ecological pyramid, emphasising a gradual decrease in two aspects of the ecosystem:<br><div align="center">Aspect I: Energy<br>Aspect II: Toxic concentration</div><br>Which of the above aspects is wrongly represented. Justify your answer. | 2 |
| 6 | a) Identify the labelled part A and B.<br>b) Write one function each for A and B<br><br><div align="center">**OR**</div><br>Explain the role of the placenta in the maturation of an embryo? | 1<br>1<br><br><br><br>2 |

| 7 | a) Where does the formation of germ cells take place? | 1 |
|---|---|---|
| | b) Does the location of these germ cells have any significance? Justify your answer with appropriate reasoning | 1 |

## SECTION B

| 8 | Consider the given table and answer the following questions: | 3 |
|---|---|---|

| Element | Electronic configuration |
|---|---|
| A | 2, 4 |
| B | 2, 8, 1 |
| C | 2, 7 |
| D | 2, 1 |

a) Which element(s) in the given table does not belong to the same period and why?

b) Which elements in the given table belong to the same group and why?

c) What is the valency of B, C, and D respectively

| 9 | Given below are the symbols of elements along with their atomic weight and atomic number as shown: | 3 |
|---|---|---|

$$^{37}_{17}A \, , \, ^{35}_{17}B \, , \, ^{79}_{34}C \, , \, ^{79}_{35}D$$

a) Find out the two pairs of isotopes among them.

b) If B and D are the first two elements from Dobereiner's triad, what will the atomic weight of the third element of the same triad be?

*OR*

Mendeléev proposed a law and according to that law, he arranged the then known 63 elements in the form of a table. He also predicted the existence of certain elements not known at that time and named two of them as eka-aluminium and eka-silicon.

a) State Mendeléev's periodic law.

b) Name the element which has taken the place of
(i) eka-aluminium, and (ii) eka-silicon

c) Write any one limitation of Mendeleev's periodic table.

| 10 | An electric heater of resistance 8 Ω draws 15 A from the service mains for 2 hours. Calculate the rate at which heat is developed in the heater. | 3 |
|---|---|---|
| | It is desired to double the resistance of the heater by making changes to its coil. Suggest two ways in which you can achieve this. | |

| | | |
|---|---|---|
| 11 | Resistors R1, R2 and R3 having values 5 Ω, 10 Ω, and 30 Ω respectively are connected in parallel across a battery of 12 volts. Calculate:<br>   a) The total circuit resistance<br>   b) The total current in the circuit<br>   c) The current through each of the resistors<br><br><div align="center">***OR***</div><br>An electric kettle consumes 1 kW of electric power when operated at 220 V. What should be the rating of the fuse that can be used for it? Availability of the fuses are 2A, 4A, 5A. Also, find the energy consumed by the kettle in 2 hours. | 3 |
| 12 |    a) Classify different types of wastes present in our environment based on degradability and explain them through examples.<br>   b) How is the recycling process different from the reducing process in waste disposal management? | 3 |
| 13 |    a) Identify the different parts of the flower X, Y and Z labelled in the diagram.<br>   b) Describe the function of these parts in a flower.<br><br><br><br><div align="center">**OR**</div><br><br>   a) List any two types of vegetative propagation.<br>   b) Write the merits of vegetative propagation. | 1 ½<br>1 ½<br><br><br><br><br><br><br><br>1<br>2 |

| | **SECTION C** | |
|---|---|---|
| 14 | Ramesh is doing an experiment to verify the heating effect of an electric current. He has taken a bucket full of water and started heating it with the help of an immersion rod. He finds that, by seeing bubbles forming and feeling warm on the walls of the bucket, water is getting warmer with time. He also tries to find out the factors that this heating effect depends on by changing the current through the rod, number of coils on the rod etc.<br>Answer the following question that he would have concluded after the experiment.<br><br>    a)  State the law which is used to describe the heating effect of electric current.<br>    b)  Write the formula for calculating heat generated by the immersion rod when operated for a time t.<br>    c)  Ramesh observes that the heater takes 30 minutes to heat the water to the desired temperature. The current through the rod is 2 A and resistance is 20 $\Omega$. The cost is ₹8/ unit. What will be the electricity cost if the heater is used for half an hour every day for 30 days? | 1<br><br>1<br><br><br>2 |
| 15 | During the Presidential elections in one of the African nations, the opposition party has taken up the issue of birth control measures to control its rapidly increasing population as its main agenda.<br>If you were given an opportunity to design the steps that the government should take and implement in order to address the issue of population explosion, what are the points you would suggest with respect to<br>    a)  Physical techniques<br>    b)  Surgical interventions | <br><br><br><br><br>2<br>2 |