Max. Marks:40 Time allowed: 2 hours

General Instructions: i) All questions are compulsory. ii) The question paper has three sections and 15 questions. All questions are compulsory. iii) 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. iv) Internal choices have been provided in some questions. A student has to attempt only one of the alternative in such questions

Section A

1.The Electronic Configuration of An Element X Is 2,8,8,2. To Which (A) Period And (B) Group of The Modern Periodic Table Does X Belong? State Its Valency.

2. A student had observed asexual reproduction of a parent Plasmodium under compound microscope. Name the type of asexual mode of reproduction occuring in Plasmodium. Give an example of an organisms undergoing spore formation.

3. Make a cross showing the inheritance pattern of height of garden pea plant

OR

With the help of schematic diagrams, explain budding in hydra.

4. Discuss the role of decomposers in the ecosystem with an example.

OR

Explain any two methods of management of wastes.

5.What is a solenoid? Draw the pattern of magnetic field lines of a bar magnet

OR

(i)Write joule's law of heating.

(ii)Two lamps,one rated 100 W,220 V and the other 60 W,220 V are connected in parallel to main supply.

6. Define homologous series.

7) a)Mention the number of set(s) of chromosomes present in a female gamete and zygote of human.

b) Explain double fertilization in sexual reproduction of flowering plants.

Section B

8 Explain food chain with the help of diagram showing the flow of energy in an ecosystem.

9. Explain the law of dominance and law of segregation.

10 Differentiate between saturated and unsaturated hydrocarbons. Give one example for each.

11 List the properties of magnetic lines of force. Why do two magnetic lines of forces not intersect with each other?

OR

Sketch the schematic diagram of electric motor. What is the role of split rings in an electric motor?

12 Diamond and graphite show different physical properties although they are made up of carbon. Name tis relationship between diamond and graphite. Give the basis of this relationship also.

13 What is meant by electromagnetic induction?Name one device which works on the principle of electromagnetic induction.

14 Group VII A elements are strong non-metals because they can easily accept an electron to form an anion whereas group 1 A element are strong metals because they can very easily lose one electron to form cation.

Metals have the tendency to lose their valence electrons and form positive ions, so metallic character is related to the ionisation potential. Elements having low ionisation potential, lose electrons easily. Thus, metallic character generally decreases across a period and increases down a group.

a The non metallic character on moving along a period –

(a) increases

(b) decreases

(c) depends on the period

(d) remains the same

b Which of the following is the correct decreasing order of metallic character?

(a) Ca > Sc > Ti > K

(b) K > Ca > Sc > Ti

(c) K > Sc > Ca > Ti

(d) Ti > Sc > Ca > K **1 Mark**

c Explain in not more than 8 lines the variance of atomic size along the period. **2 Marks**

**OR**

Show the variance of:

a)Atomic size and valency down the group.

b) valence shell electrons and metallic character down the group.

15. To participate in Jawaharlal Nehru National Science, Mathematics and Environmental Science Exhibition (JNNSMEE), class X students tried to artificially cross pollinated a violet flower (WW) bearing pea plant with a white flower (ww) growing pea plant and observed all pea plants  
obtained in both F1 and F2 generations.

a. What will be set of genes present in the F1 generations? **1 Mark**

b. Give reason why only tall plants are observed in F1 progeny. **1 Mark**

c. Mention the phenotypic ratio and genotypic ratio of F2 generations. **2 Marks**

**OR**

Illustrate a dihybrid cross for inheritance of both seed colour and seed shape in garden pea plant. Write the Phenotypic ratio of F2 generations.