

**Science**

2<sup>nd</sup> Term (Apr-May 2022)

Mega Test – 5

Class 10<sup>th</sup>

Time allowed: 2 h

Max. Marks: 40

Section	A	B	C
Q. No.	1 – 7	8 – 13	14 – 15
Marks	2	3	4

**Section A**

- (i) Which two of the following compounds belong to same homologous series?  
 $C_2H_6$ ,  $C_3H_6$ ,  $CH_4$ ,  $C_2H_2$ .  
(ii) Write one property of any homologous series.
- An element belongs to third period and second group of the periodic table
  - State number of valence – electrons in it.
  - Is it a metal or a non – metal?
  - Name the element.
  - Write the formula of its oxide.
- Explain Fertilization in plants.
- What are sexually transmitted diseases (STD)? Name any two.
- (a) Name the unit of inheritance. What is its function?  
(b) How are inherited traits different from acquired traits? Give example.
- Draw a labeled diagram of the pattern of field lines due to a current flowing through a circular coil.
- What is 10% law in the context of energy transfer in food chains? Explain giving an example.

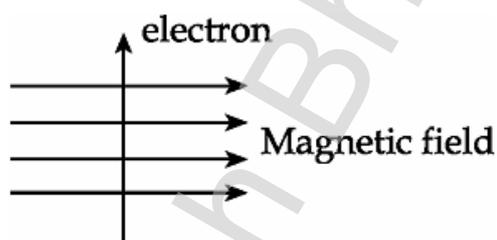
**Section B**

- An element X is placed in group 14. State the formula and the nature of bonding in its chloride. Draw its electron dot structure of its chloride.
- The elements X and Y have five and seven valence electrons. Based upon this information, answer the following questions:
  - Predict the nature of elements whether metals or non-metals.
  - What is the nature of the molecule when these combine?
  - Draw the structure of molecule.

10. With the help of a cross done with garden pea plants, trace the work done by Mendel with a tall and a short plant to arrive at a 3 : 1 ratio in the F<sub>2</sub> generation.
11. Derive an expression for the equivalent resistance of the combination of three resistors connected in parallel.
12. Give an experiment to verify the Ohm's law in laboratory. Draw a circuit diagram and write precautions to taken during the experiment.
13. Why are some substances biodegradable and some non-biodegradable? Name two substances each from both categories.

### Section C

14. Write differences between external and internal fertilization. Give two examples of each category of organisms where these forms occur.
15. (a) An electron enters a uniform magnetic field at right angles to it as shown in the figure below. In which direction will this electron move? State the rule applied by you in finding the direction of motion of the electron.



- (b) What is an electromagnet? Which material is best suited to make it? How it is different than a permanent magnet? Write two differences.

