

Science

2nd Sem (Apr-May 2022)

Mega Test – 3

Class 10th

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

- Carbon only forms covalent compounds. Why?
- Nitrogen (Atomic number 7) and phosphorus (Atomic number 15) belong to the same group of the periodic table. Write electronic configuration of these two elements. Which of these two is more electronegative? Why?
- What is fission? Write names of any two organisms which reproduce by this method.
- How does the embryo get nourishment inside the mother's body?
- The genotype of green stemmed tomato plants is denoted by GG and that of purple stemmed tomato plants as gg. When these two plants are crossed:
 - What colour of stem would you expect in their F₁ progeny?
 - Give the percentage of purple-stemmed plants if F₁ plants are self-pollinated.
 - In what ratio would you find the green and purple colour in the F₂ progeny?
- A student performs an experiment to study the magnetic effect of current around a current carrying straight conductor with the help of a magnetic compass. He reports that:
 - The degree of deflection of the magnetic compass increases when the compass is moved away from the conductor.
 - The degree of deflection of the magnetic compass increases when the current through the conductor is increased.Which of the above observations of the student appears to be wrong and why?
- Select the biodegradable wastes from the following:
DDT, Crop's residue, Leather and glass
 - In a food chain consisting of snake, insect, grass and frog, assign an appropriate trophic level to frog.

Section B

8. (a) Arrange the following elements in the descending order of atomic size and give a reason for your answer: Mg, Cl, P, Ar (Atomic numbers of these elements are 12, 17, 15, 18 respectively.)
(b) What are metalloids? Name any two.
9. Explain why covalent compounds
(i) have low melting and boiling points.
(ii) are poor conductors of electricity.
- 10.(a) Differentiate between dominant and recessive traits.
(b) 'Genes control traits'. Explain this statement with an example.
- 11.Name the electric device that converts electrical energy into mechanical energy. On what principle the device works? Name the main parts of this device and their function in brief.
- 12.What is heating effect of current? What is the cause of it? An electric iron of resistance $20\ \Omega$ takes a current of 5 A. Calculate the heat developed in 30 s.
- 13.Draw a neat diagram and explain how transfer of energy takes place in a food chain.

Section C

- 14.(a) How do Mendel's experiments show that traits may be dominant or recessive?
(b) Define Variations.
- 15.State the rule to determine the direction of force experienced by a current carrying conductor in a magnetic field. How will this force get affected on :
(i) Doubling the magnitude of current?
(ii) Reversing the direction of current flow?

