

**SAMPLE PAPER – 1**

**TIME : 2 HRS.**

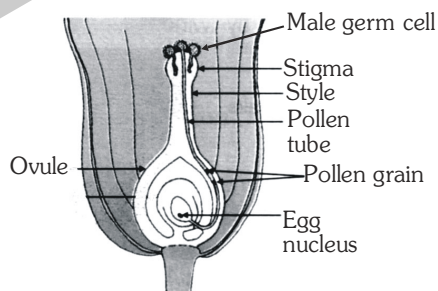
**MAX. MARKS : 40**

**GENERAL INSTRUCTIONS :**

- All questions are compulsory.
- The questions paper has three sections and 15 questions.
- 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.
- Internal choices have been provided in some questions. A student has to attempt only one of the alternatives in such questions.
- Wherever necessary, neat and properly labelled diagrams should be drawn.

**SECTION-A**

- Atom of an element contains five electrons in its valence shell. This element is major component of air. It exists as a diatomic molecule.
  - Identify the element.
  - Show the bond formed between two atoms of this element.
- Na, Mg and Al are the elements of the same period of Modern Periodic Table having one, two and three valence electrons respectively. Which of these elements (i) has the largest atomic radius, (ii) is least reactive? Justify your answer stating reason for each case.
- (a) Name the site of implantation and development of baby in human female.  
(b) Which glands provide fluid to the semen ?
- (a) Define germination.  
(b) From the diagram given below identify the incorrectly labelled parts.



- "It is possible that a trait is inherited but may not be expressed". Give a suitable example to justify this statement.

OR

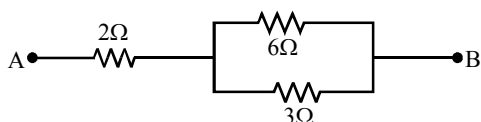
A blue colour flower plant denoted by BB is crossed with white colour flower plant bb.

- What is the colour of flower you would expect in their  $F_1$  generation plants.
- What should be the percentage of white flower plants in  $F_2$  generation if flowers of  $F_1$  plants are self pollinated.

6. Two wires of same metal have the same length but their cross-sectional areas are in the ratio 8 : 5. The resistance of the thicker wire is  $10\ \Omega$ . What is the resistance of the other wire?

OR

Find the effective resistance between the points A and B in the network shown below.



7. Consider the food chain-

Grass  $\rightarrow$  Deer  $\rightarrow$  Lion

What will happen if lions are removed from the above food chain?

OR

In a lake contaminated with pesticides, which one of the following food chain of organisms living in the lake will contain the maximum amount of pesticide & why?

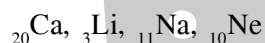
Phytoplankton  $\rightarrow$  Zooplankton  $\rightarrow$  Small fish  $\rightarrow$  Big fish

## SECTION-B

8. Give reasons for the following :

- Element carbon forms compounds mainly by covalent bonding.
- Diamond has a high melting point.
- Graphite is a good conductor of electricity.

9. Choose from the following :



- An element having two shells completely filled with electrons.
- Two elements belonging to the same group of the periodic table.

OR

- Define isomerism.
- Explain why propane cannot exhibit this property ?
- How many chain isomers of butane can be formed ?

10. In a monohybrid cross, pink coloured flowers are dominant over white coloured flowers. If parent plants belong to pure breeding dominant trait and pure breeding recessive trait, what will be the phenotype or morphological feature of  $F_1$ -generation?

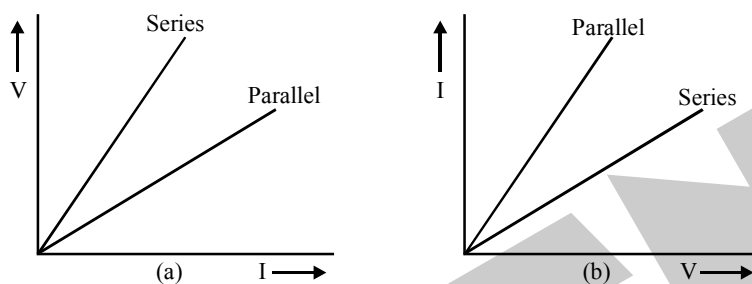
If  $F_1$  plants are self fertilised, what would be the phenotypic ratio or how many dominant and recessive traits will be produced in the progeny? Explain with an illustration.

11. With the help of an activity, explain the method of inducing electric current in a coil with a moving magnet. Name the rule used to find the direction of electric current thus generated in the coil.

12. Two lamps, one rated at 40W - 220 V and the other 60 W - 220 V, are connected in parallel to the electric supply at 220 V.
- Draw a circuit diagram to show the connections.
  - Calculate the current drawn from the electric supply source.
  - Calculate the total energy consumed by the two lamps together when they operate for one hour.

**OR**

- Two students perform the experiment on series and parallel combinations of two given resistors  $R_1$  and  $R_2$  and plot the following V-I graphs (a) and (b).



Which of the graphs is (are) correctly labelled in terms of the words 'series' and 'parallel'? Justify your answer.

- State the two factors on which resistivity of a conductor depends.
13. Naman got into a quarrel with some farmers who were spraying DDT in their field. Many people gathered at the spot to see and enjoy the incident. The angry mob demanded that naman should not interfere in the farmers' job. Naman tried to explain his point and finally succeeded. The farmers gave up spraying DDT.
- What did Naman explain to the farmers?
  - What is biomagnification ? Explain with an example.

### SECTION-C

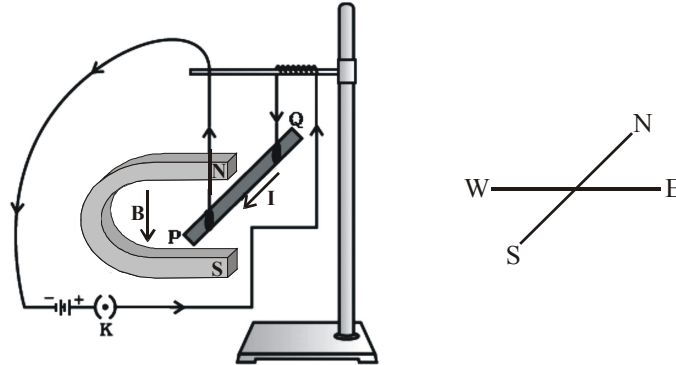
**This section has 02 case based questions (Q.14 & 15). Each case is followed by 03 sub-questions (a, b & c). Parts a and b are compulsory. However, an internal choice has been provided in part c.**

14. Ria crossed pure round and yellow seeds pea plants with wrinkled and green seeds pea plant and found that only A-B type of seeds were produced in the  $F_1$  generation. When  $F_1$  generation pea plants having A-B type of seeds were crossed by self pollination, then in addition to the original parental combination (Round, yellow & wrinkled, green seeds), two new varieties A-D and C-B types were also obtained.
- What are the A-B type of seeds?
  - What are A-D type and C-B types of seeds?
  - What should be the phenotype and genotype ratio of  $F_2$  progeny?

**OR**

What phenotype ratio will obtained if  $F_1$  progeny will be crossed with recessive parent.

15. A group of students setup an arrangement in laboratory to demonstrate how a magnetic force acts on a current carrying conductor when it is placed in an external magnetic field. They suspend an aluminium rod PQ horizontally along North-South between the two magnetic poles of a horseshoe magnet vertically placed as shown in the figure.



Based on the activity, when a current is passed through the rod PQ, answer the following questions:

- State the rule which you can use to find the direction of magnetic force on the current carrying rod PQ in the above arrangement.
- If the current through the rod PQ is reversed, in which direction the rod will deflect?
- How the deflection of the rod PQ is affected when a resistor is connected in series with the rod, in the electric supply circuit of the rod?

**OR**

If the horseshoe magnet is replaced by a U-shaped electromagnet at the same position with similar orientation ; mention any two methods by which you can increase the deflection of current carrying rod PQ.