

# Pratap Public School, Karnal

Pre-Board Examination- 2021-2022

Class - X

Subject - Science

M.M :40

Time : 2 Hours

Name ..... Roll No. .... Section .....

## General instructions:-

- i) All questions are compulsory.
- ii) The question paper has three sections and 15 questions.
- iii) Section-A has 7 questions of 2 marks each. Section-B has 6 questions of 3 marks each and Section-C has two 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 alternatives in such questions.

## (Section - A)

1. Arrange the following in the decreasing order of their atomic size:  
a) Na, Mg, K  
b) N, F, O (2)
2. Choose from the following:  
Ca, Li, Na, Ne  
a) An element having two shells completely filled with electrons.  
b) Two elements belonging to the same group in the Periodic table. (2)
3. a) Name the hormone secreted by human male reproductive organ and state its function.  
b) State, in brief, how an embryo gets its nourishment inside the mother's body. (2)
4. a) Identify the asexual method of reproduction in each of the following organisms:-  
i) Amoeba  
ii) Planaria  
b) Show in sequence the process of budding in Hydra with the help of diagram. (2)
5. The genotype of green-stemmed tomato plants is denoted as GG and that of purple-stemmed tomato plants as gg. When these two are crossed,  
a) What colour of the stem would you expect in their F1 progeny?  
b) Give the percentage of purple-stemmed plants, if F1 plants are self pollinated. (2)

OR

- a) Write full form of DNA.
- b) Why is variation beneficial for the species, but not necessarily for the individual?

6. Justify the following statements:

a) Two magnetic field lines never intersect each other.

b) Magnetic field lines are closed curves.

(2)

OR

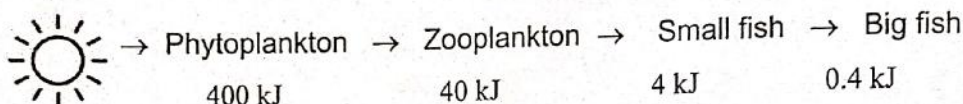
How does a current carrying solenoid behave? Give its main use.

7. 'Our food grains such as wheat and rice, the vegetables and fruits and even meat are found to contain varying amounts of pesticide residues'. State the reason to explain how and why it happens.

(2)

OR

What is depicted in the following picture?



### (Section -B)

a) What is the Next homolog of  $\text{CH}_3\text{OH}$ .

b) What are the characteristics of Homologous series.

(3)

OR

a) Draw electron dot structure of ethane.

b) Calculate total no. of bonds in Butane.

c) How many electrons are shared by one carbon with other carbon in ethyne.

9. a) What were the criteria used by Mendeleev in creating his Periodic table?

b) Define Dobereiner's triads?

(3)

10. 'Sex of a newborn is a matter of chance and none of the parents may be considered responsible for it'. Justify this statement with the help of a flowchart showing determination of sex of a newborn.

(3)

11. In an experiment to study the relationship between the potential difference across a resistor and the current through it, a student recorded the following observations:

Potential difference (V)	2.0	3.0	4.5	5.0	6.0
Current (A)	0.08	0.12	0.15	0.20	0.24

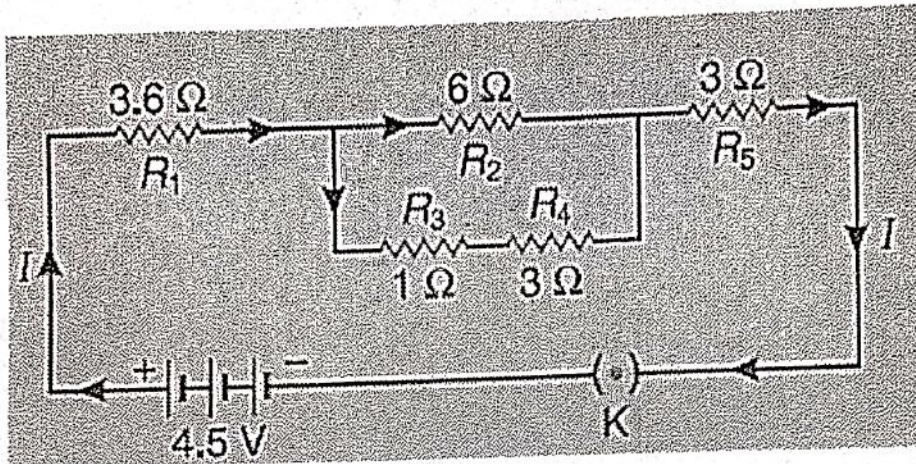
Find, in which one of the above sets of reading, the trend is different from others and must be rejected. Calculate the mean value of resistance of the resistor based on the remaining sets

of readings. (3)

12. Draw a schematic diagram of a circuit consisting of a 24 V battery, a 10  $\Omega$  resistor, a 5  $\Omega$  resistor, a 1  $\Omega$  resistor, an ammeter and a plug key all connected in series. Calculate the ammeter reading and potential difference at the ends of 10  $\Omega$  resistor. (3)

OR

Find the value of current  $I$  flowing through the electric circuit shown in the following diagram.



13. a) Which gas shields the surface of earth from harmful radiations of the sun?  
b) Why is it essential for all living beings? State the cause for the depletion of this gas. (3)

### (Section-C)

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

14. Raman in one of his experiments with Pea plants crossed tall plants (TT) with dwarf plants (tt).

- a) Write his observations of the F1 generation. (1)  
b) Give reason for your answer. (1)  
c) When F1 plants were self-pollinated, a total of 400 plants were produced. How many of these would be tall, medium height or dwarf plants? Give the genotype of F2 generation. (2)

OR

When F1 plants were cross-pollinated with plants having tt genes, a total of 400 plants were produced. How many of these would be tall, medium height or dwarf plants? Give the genotype of F2 generation.

15. Saksham took a straight copper wire and placed it on a wooden table. He placed a magnetic compass near it and connected it to a cell. He then turned the switch on to allow the current to flow through the wire.

Based on your understanding of the phenomenon, answer the following questions:

- (a) What change is observed in the magnetic compass when the switch is turned on? (1)
- (b) What happens when the current in the wire is increased? (1)
- (c) Why does a current carrying conductor kept in a magnetic field experience force? What is the direction of force acting on the conductor? (2)

OR

A horizontal power line carries current in east to west direction. What is the direction of the magnetic field due to the current in the power line at a point above and at a point just below the power line?