

# TERM - II

# SAMPLE QUESTION PAPER

## BLUEPRINT

Time Allowed : 2 hours

Maximum Marks : 40

Ch. No.		Chapter Name	Section-A (2 Marks)	Section-B (3 Marks)	Section-C (4 Marks)	Total
4.	Unit-I	Carbon and Its Compounds	1(2)	1(3)*	–	4(10)
5.		Periodic Classification of Elements	1(2)	1(3)	–	
8.	Unit-II	How do Organisms Reproduce?	2(4)	1(3)	–	5(13)
9.		Heredity and Evolution	1(2)*	–	1(4)	
12.	Unit-IV	Electricity	–	2(6)*	–	4(12)
13.		Magnetic Effects of Electric Current	1(2)*	–	1(4)	
15.	Unit-V	Our Environment	1(2)*	1(3)	–	2(5)
		<b>Total Questions</b>	<b>7(14)</b>	<b>6(18)</b>	<b>2(8)</b>	<b>15(40)</b>

\*It is a choice based question.

# SCIENCE

Time allowed : 2 hours

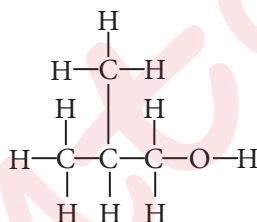
Maximum marks : 40

## 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 alternatives in such questions.

## SECTION - A

1. An organic molecule has the following structure :



- (i) To which homologous series does this molecule belong ?
- (ii) What is the general formula of this homologous series?
2. The electronic configuration of an element is 2, 8, 7.
  - (a) State its group and period in the Modern Periodic Table.
  - (b) Identify the element and predict the nature of oxide of the element.
3. Ovaries are primary sex organs of human female which are located in the lower part of abdominal cavity near the kidneys. Name the hormones secreted by human female ovaries. Write down their roles.
4. Write two differences between binary fission and multiple fission.
5. Explain briefly about ZW-ZZ type of sex determination.

OR

Does genetic combination of mother play a significant role in determining the sex of the new born? Give reason to support your answer.

6. How can you show that the magnetic field produced by a given electric current in the wire decreases as the distance from the wire increases?

OR

A long wire carrying a steady current is bent into a circular loop of one turn. The magnetic field at the centre of the loop is  $B$ . It is then bent into a circular coil of  $n$  turns. Find the magnetic field at the centre of this coil of  $n$  turns.

7. Grass → Grasshopper → Frog → Snake → Eagle

In the above food chain, which of the organism will have

- (a) maximum available energy?
- (b) minimum available energy?

OR

Differentiate between biodegradable and non-biodegradable wastes.

## SECTION - B

8. Potassium, bromine and krypton are elements in period 4 of the Periodic Table.

- (a) In which group of the periodic table can these elements be found?
- (b) Bromine exists as a molecule. Draw a 'dot-and-cross' diagram to show the bonding in a molecule of bromine.
- (c) Krypton does not react with either potassium or bromine. Explain the unreactive nature of krypton.

9. (a) Why two carbon atoms cannot be linked by more than three covalent bonds?  
(b) Give three differences between diamond and graphite.

OR

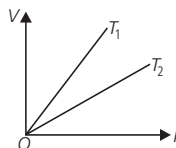
The table given below shows some information about four organic compounds *P*, *Q*, *R* and *S*.

Organic compound	Molecular formula	Melting point (°C)	Boiling point (°C)
<i>P</i>	$C_3H_8$	-188	-42
<i>Q</i>	$C_4H_{10}$	-138	-1
<i>R</i>	$C_5H_{12}$	-130	36
<i>S</i>	$C_6H_{12}$	6	80

- (a) Which homologous series does  $C_3H_8$  belong to? Why are *P*, *Q*, *R* and *S* classified as hydrocarbons?
- (b) Which of these organic compounds belong to the alkane series?
- (c) Based on the information given above, state one characteristic of the alkane series.

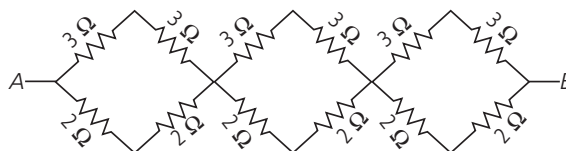
10. Where can we find greater variations in individuals – during asexual reproduction or sexual reproduction? Justify your answer.

11. (a) The voltage  $V$  and current  $I$  graphs for a conductor at two different temperatures  $T_1$  and  $T_2$  are shown in the figure. What will be the relation between  $T_1$  and  $T_2$ ?



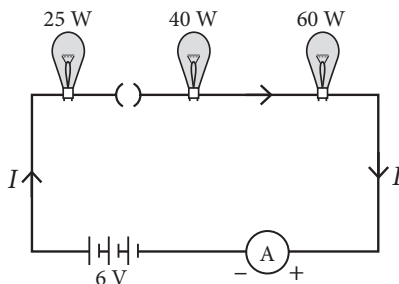
(b) A 2 m long wire with a cross-sectional area of  $1 \text{ mm}^2$  has a resistance of  $16 \Omega$ . What is the resistance of the wire if it has a cross-sectional area of  $2 \text{ mm}^2$ ?

12. Find the equivalent resistance of the given network between points *A* and *B*.



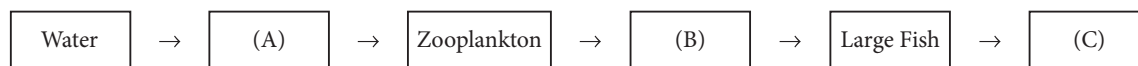
OR

In the circuit given below,



- (a) Would any bulb glow when plug key is in open position?
- (b) Write the order of brightness of the bulb when key is closed. Give reason.

13. Study the figure based on the biogmagnification of pesticides and answer the questions that follows :



- (a) Name the given figure and identify the labelled parts 'A', 'B' and 'C'.
- (b) Mention harmful non-biodegradable chemicals that enter in the bodies of organisms shown here.

### SECTION - C

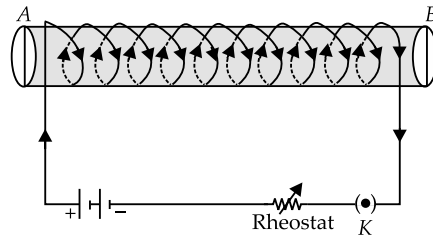
This section has 02 case-based questions (14 and 15). Each case is followed by 03 sub-questions (a, b and c). Parts a and b are compulsory. However, an internal choice has been provided in part c.

14. A cross was carried out between a pure breed of tall pea plant and a pure breed of dwarf pea plant and  $F_1$  progeny was obtained.  $F_1$  progeny was selfed to obtain  $F_2$  progeny.
- (a) Write the phenotype of the  $F_1$  progeny with reason?
  - (b) What will be the phenotypic ratio of the  $F_2$  progeny?
  - (c) Why  $F_2$  progeny is different from the  $F_1$  progeny?

OR

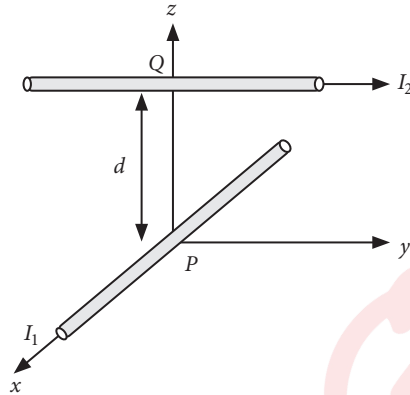
What would be the ratio of progenies when  $F_1$  progeny and dwarf parent plant are crossed? Work out the cross.

15. An insulated copper wire wound on a cylindrical cardboard tube such that its length is greater than its diameter is called a solenoid. When an electric current is passed through the solenoid, it produces a magnetic field around it. The magnetic field produced by a current-carrying solenoid is similar to the magnetic field produced by a bar magnet. The field lines inside the solenoid are in the form of parallel straight lines. The strong magnetic field produced inside a current-carrying solenoid can be used to magnetise a piece of magnetic material like soft iron, when placed inside the solenoid. The strength of magnetic field produced by a current carrying solenoid is directly proportional to the number of turns and strength of current in the solenoid.
- (a) What is the strength of magnetic field inside a long current-carrying straight solenoid ?
  - (b) A long solenoid carrying a current produces a magnetic field  $B$  along its axis. If the current is double and the number of turns per cm is halved then what will be new value of magnetic field ?
  - (c) A soft iron bar is enclosed by a coil of insulated copper wire as shown in figure. When the plug of the key is closed, which face of iron bar marked as N-pole ?



OR

Two long wires  $P$  and  $Q$  carrying current  $I_1$  and  $I_2$  are arranged as shown in figure.



Wire  $P$  carrying current  $I_1$  along  $x$ -axis. Wire  $Q$  carrying current  $I_2$  along a line parallel to  $y$ -axis given by  $x = 0$  and  $z = d$ . Find the force exerted by wire  $P$  on wire  $Q$ .