Roll Number		

SET A

INDIAN SCHOOL MUSCAT
SECOND PRE - BOARD EXAMINATION
SCIENCE (086)

CLASS: X | TERM 2 | Time Allotted: 2 hrs

12.04.2022 | Max. 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.

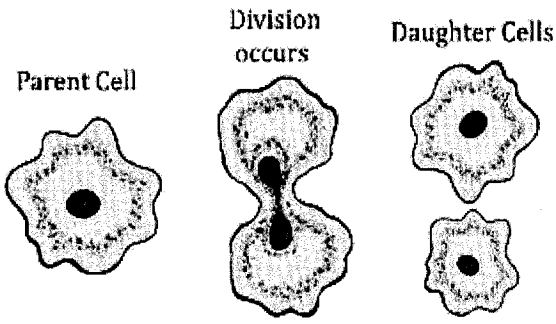
iv) Internal choices have been provided in some questions. A student has to attempt only one of the alternatives in such questions.

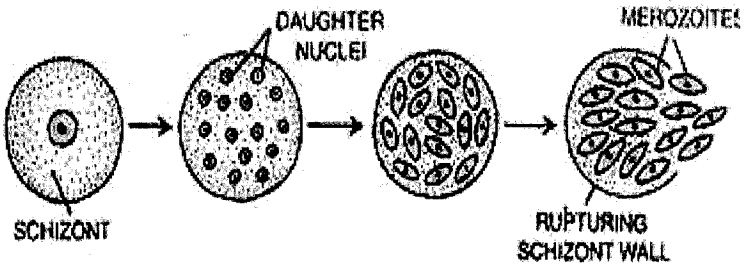
SECTION – A

1. (a) Draw the electron dot structure of methane molecule. 2
   (b) Identify the functional groups present in the following compounds :
   (i) C_2H_6O (ii) $C_2H_4O_2$

2. An element X has same number of electrons in the first and the fourth shell. The number of electrons are also same in the second and third shell. 2
   (a) Write down the electronic configuration of the element.
   (b) Write down the group number and the period number of the element in the periodic table.

3. The given below diagrams are the two types of asexual reproduction. Which process is better and why? Give your answer. 2





4. (a) If a woman is using a copper T, will it help in protecting her from sexually transmitted diseases? 2
(b) Name the structure that will remove the waste generated by the developing embryo.
(c) List two STDs caused by bacteria.

5. Define 'Heredity'. Write any two contrasting characters other than height that Mendel used in his experiments in pea plants. 2

OR

(a) How can we say that change in genes can be brought about by change in DNA?
(b) In human beings, the statistical probability of getting either a male or female child is 50: 50. Give a suitable explanation.

6. (a) Draw a diagram to represent a uniform magnetic field in a given region. 2
(b) List two properties of magnetic field lines.

OR

(a) What do you mean by a solenoid?
(b) Draw magnetic field lines around a solenoid.

7. (a) The following organisms form a food chain. Which of these will have the highest concentration of non-biodegradable chemicals? Name the phenomenon associated with it. 2
Insects, Hawk, Grass, Snake, Frog
(b) 'Energy flow in food chain is always unidirectional'. Justify this statement.

OR

Teacher was explaining the chapter 'our environment' in the class. After that a few students wanted to clarify the following doubts. How would you clarify the same for those students?
(a) Why is excessive use of CFCs a cause of concern?
(b) What are the two diseases caused in human beings due to depletion of ozone layer in the atmosphere?

SECTION - B

8. The electronic configuration of an element is 2, 8, 6. 3
(a) State its group and period in the modern Periodic Table.
(b) Identify the element and predict the nature of oxide of the element.

9. Study the given homologous series in the table and answer the questions that follow: 3

Value of n	2	3	4	5	6	7	8	9	10
Molecular formula	C_2H_4	C_3H_6	A	C_5H_{10}	C_6H_{12}	B	C_8H_{16}	C_9H_{18}	$C_{10}H_{20}$

(a) What type of hydrocarbons are given in this homologous series?
(b) What is the general formula for this series? Identify A and B.
(c) What type of covalent bonds are present in these compound?

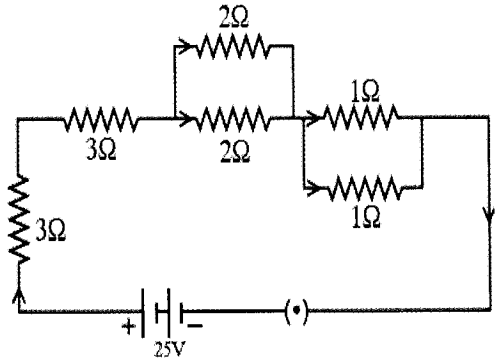
OR

Account for the following :
(a) Elements of group 18 are called zero valent.
(b) Elements in a group of periodic table have similar chemical properties.

10. Akhil wanted to do some experiment on pea plant after learning heredity chapter in class X. He cross- bred a tall (dominant) pea plant with pure-bred dwarf (recessive) pea plant and got some plants of F1 generation. Akhil self- crossed the pea plant of F1 generation and obtained pea plants of F2 generation. 3
(a) What do the plants of F1 generation look like?
(b) State the ratio of tall plant to dwarf plants in F2 generation.
(c) State the type of plants not found in F1 generation but appeared in F2 generation. Write the reason for the same.

11. (a) What happens to resistance of a conductor when its area of cross-section is increased? Justify your answer. 3
(b) A house is installed with the following appliances
(i) 10 bulbs of 50W each that works for 5h daily
(ii) 4 fans of 75W each that runs for 12h daily
(iii) Electric iron of 1400W that is used for 2h daily.
Calculate the cost of electricity bill to be paid in the month of June if the unit price is Rs.4.00

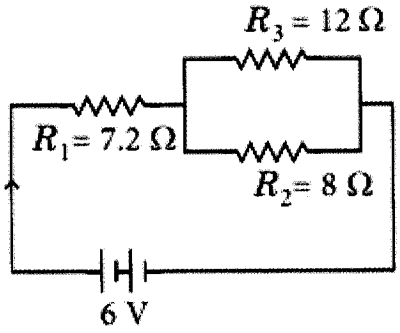
12. (a) Why are alloys commonly used in electrical heating devices? Give reason. 3
(b) Calculate the equivalent resistance and total current from the following electric circuit if the potential difference is 25 V.



OR

(a) Explain why parallel arrangement is not used for domestic circuits?

(b) Calculate total current and effective resistance from the electric circuit given below if the potential difference is 6V.



13. (a) If all the wastes we generate is bio-degradable what impact may this have o the environment? 3

(b) Mention any two waste disposal methods.

(c) Define 'food web'.

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 newly married couple does not want have children for few years. They consulted a doctor who advised them barrier method and chemical method of birth control. Yet another couple who already have two children and are middle aged also consulted doctor for some permanent solution to avoid unwanted pregnancy. Doctor advised them surgical method of birth control. 4

(a) What could be the reason for adopting contraceptive methods (Any two points)

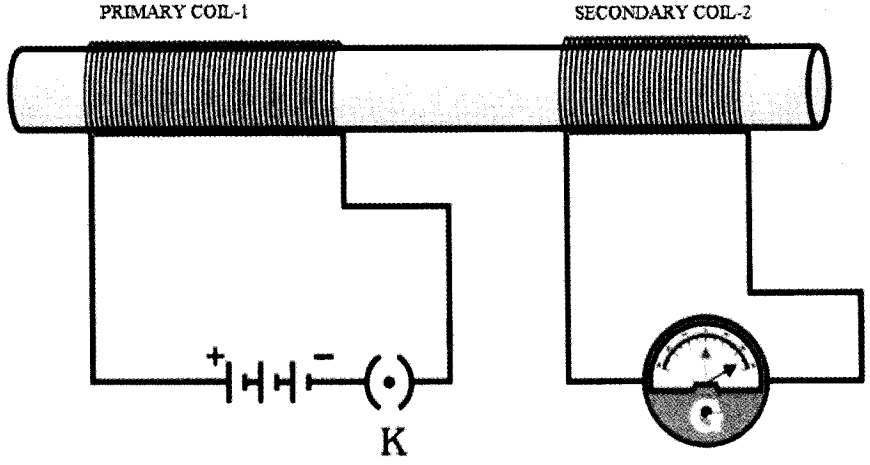
(b) Explain the two types of surgical methods in brief.

(c) Mention the two viral sexually transmitted diseases. Write the most effective contraception which prevent sexually transmitted diseases.

OR

(c) What is contraception? How do physical barriers prevent pregnancy?

15. Two sets of coil are wound on a non-conducting cylindrical rod as shown in the figure: 4



State your observation in the galvanometer.

(a) When key K is pressed on.

(b) When current in the primary coil-1 is switched off.

(c) Name and state the phenomenon associated with the activity shown above.

OR

(c) Name and state the rule with which the direction of induced current can be determined from the above activity.

End of the Question Paper

Roll Number		

SET B

INDIAN SCHOOL MUSCAT
SECOND PRE-BOARD EXAMINATION
SCIENCE (086)

CLASS: X | TERM 2 | Time Allotted: 2 hrs

12.04.2022 | Max. Marks: 40

GENERAL INSTRUCTIONS

i) All questions are compulsory.

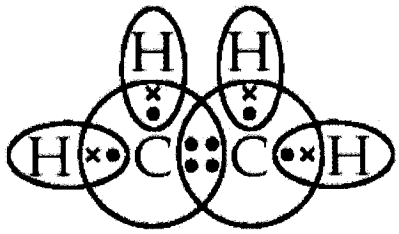
ii) The question paper has **three sections** and **15 questions**. All questions are compulsory.

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. Observe the given structure and answer the following questions. 2



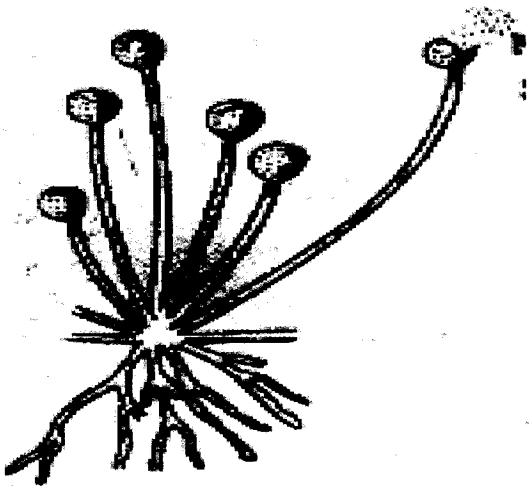
(a) Name the given compound. Give the molecular formula of the given compound.

(b) How many double covalent bonds are there?

2. (a) An element has electronic configuration 2, 8. What is the location of this element in Periodic Table? 2

(b) Why does atomic size increase from top to bottom in a group?

3. Define the type of asexual reproduction given in the diagram. Write any two advantages of the same. 2



4. (a) Mention the role of the following organs of human male reproductive system. 2

(i) Testis
(ii) Vas deferens

(b) Why are testes located outside the abdominal cavity?

5. Define 'Heredity'. Write any two contrasting characters other than height that Mendel used in his experiments in pea plants. 2

OR

(a) How can we say that change in genes can be brought about by change in DNA?
(b) In human beings, the statistical probability of getting either a male or female child is 50: 50. Give a suitable explanation.

6. State how the magnetic field produced by a straight current carrying conductor at a point depends on (a) current through the conductor (b) distance of point from conductor. 2

OR

(a) Draw a neat diagram showing how magnetic field is produced around a current carrying circular coil.
(b) State the rule associated with the above activity.

7. (a) The following organisms form a food chain. Which of these will have the highest concentration of non-biodegradable chemicals? Name the phenomenon associated with it. 2

Insects, Hawk, Grass, Snake, Frog

(b) 'Energy flow in food chain is always unidirectional'. Justify this statement.

OR

Teacher was explaining the chapter 'our environment' in the class. After that a few students wanted to clarify the following doubts. How would you clarify the same for those students?
(a) Why is excessive use of CFCs a cause of concern?
(b) What are the two diseases caused in human beings due to depletion of ozone layer in the atmosphere?

SECTION - B

8. Give the names and structures of 3
(a) An alcohol and (b)) an aldehyde with four carbon atoms in their molecules.

9. An element X belongs to 3rd period and group 13 of the modern periodic table : 3
(a) Determine the valence electrons and the valency of X.
(b) Molecular formula of the compound formed when X reacts with an element Y (atomic number = 8)
(c) Write the name and formula of the compound formed when X combines with chlorine.

OR

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

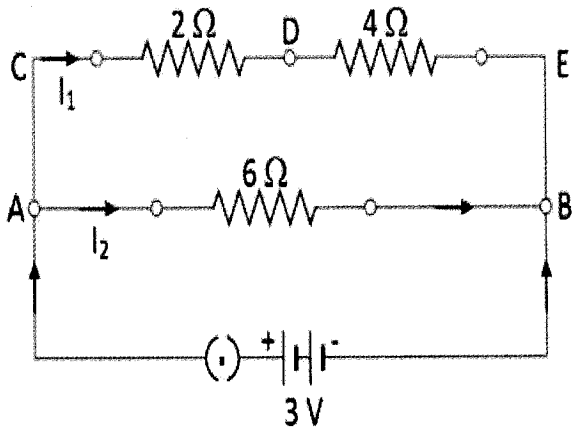
Organic compound	Molecular formula	Melting point (°C)	Boiling point (°C)
P	C_3H_8	-188	-42
Q	C_4H_{10}	-138	-1
R	C_5H_{12}	-130	36
S	C_6H_{12}	6	80

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

10. Deepti wanted to do some experiment on pea plant after learning heredity chapter in class X. She cross- bred a pea plant having purple flower (dominant) with another pea plant having white flowers (recessive) and got the plants with some flowers in F1 generation. Deepti self- crossed the pea plant of F1 generation and obtained pea plants of F2 generation. 3
(a) What type of flowers she got in F1 generation?
(b) State the ratio of purple flowers to white flower in F2 generation.
(c) State the flower colour not found in F1 generation but appeared in F2 generation. Write the reason for the same.

11. (a) What is the commercial unit of electrical energy? Convert it into joules. 3
(b) An electric bulb is rated at 60 W, 240 V. Calculate its resistance. If the voltage drops to 192 V, calculate the power consumed by the bulb.

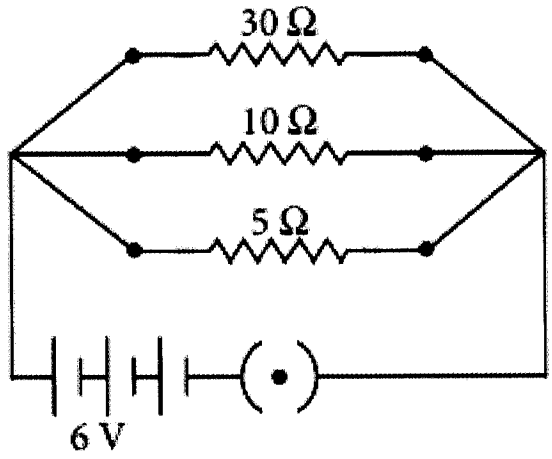
12. (a) What are the factors on which resistance of a conductor depend? 3
(b) Calculate total current and total resistance from the electric circuit given below, if the potential difference is 3V.



OR

(a) Define SI unit of electric potential.

(b) Calculate total current and effective resistance from the following electric circuit if the potential difference is 6V.



13. What will happen if we kill all the organisms in one trophic level? Enlist three points. 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. A newly married couple does not want have children for few years. They consulted a doctor who advised them barrier method and chemical method of birth control. Yet another couple who already have two children and are middle aged also consulted doctor for some permanent solution to avoid unwanted pregnancy. Doctor advised them surgical method of birth control. 4

(a) What could be the reason for adopting contraceptive methods (Any two points)

(b) Explain the two types of surgical methods in brief.

(c) Mention the two viral sexually transmitted diseases. Write the most effective contraception which prevent sexually transmitted diseases.

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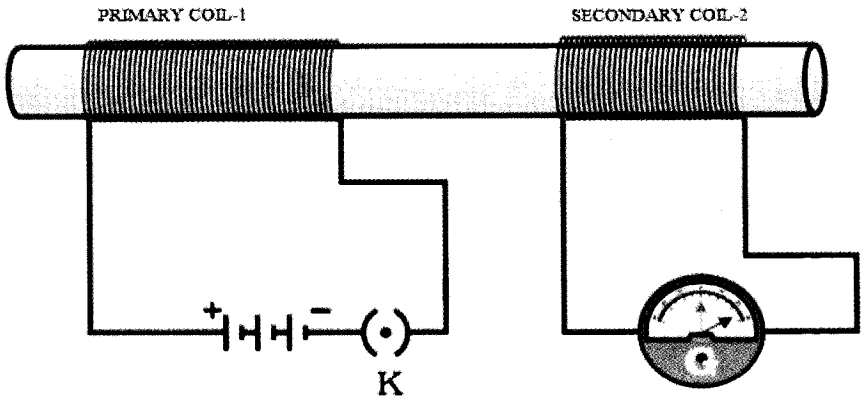

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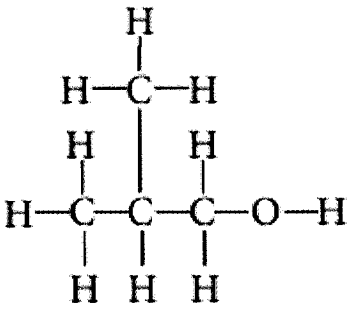
SECTION - A

1. An organic molecule has the following structure : 2



(a) To which homologous series does this molecule belong?

(b) What is the general formula of this homologous series?

2. (a) An element has electronic configuration 2, 8. What is the location of this element in the periodic table? 2

(b) Why does atomic size increase from top to bottom in a group?

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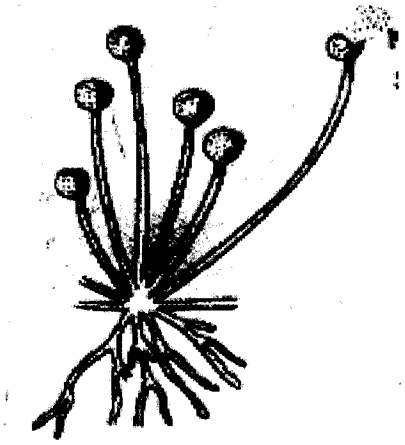

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(a) Why is excessive use of CFCs a cause of concern?
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SECTION - B

8. A part of the Periodic Table has been shown below 3

Group / Period	I	II	XVI	XVII	XVIII
1					
2	A	D	F	B	C
3					E

On the basis of above table answer the following questions :

(a) Which element will form anion with charge -1?

(b) Which element will have the smallest atomic size and forms R_2O type of Oxides?

(c) Which element will have chemical properties similar to magnesium (atomic number 12)

(d) Which element has completely filled K and L shell?

(e) Which element helps in combustion of carbon?

(f) What is the chemical formula obtained when D reacts with B?

9. Study the given homologous series in the table and answer the questions that follow: 3

Value of *n*	2	3	4	5	6	7	8	9	10
Molecular formula	C_2H_4	C_3H_6	A	C_5H_{10}	C_6H_{12}	B	C_8H_{16}	C_9H_{18}	$C_{10}H_{20}$

(a) What type of hydrocarbons are given in this homologous series?

(b) What is the general formula for this series? Identify A and B.

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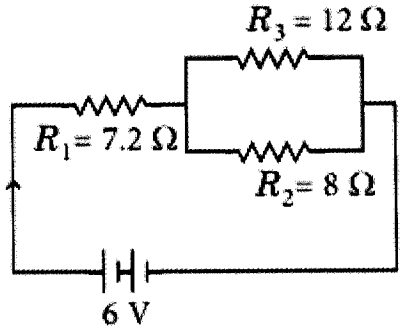
(b) A house is installed with the following appliances
(i) 10 bulbs of 50W each that works for 7h daily
(ii) 4 fans of 75W each that runs for 9h daily.
Calculate the cost of electricity bill to be paid in the month of April if the unit price is Rs.6.50

12. (a) Why are coils of room heater made of an alloy rather than a pure metal? 3
(b) Derive the expression for effective resistance when three resistors are connected in parallel with the help of a neat circuit diagram.

OR

(a) Write SI unit of resistivity.
(b) Calculate total current and effective resistance from the electric circuit given below if the potential difference is 6 V.



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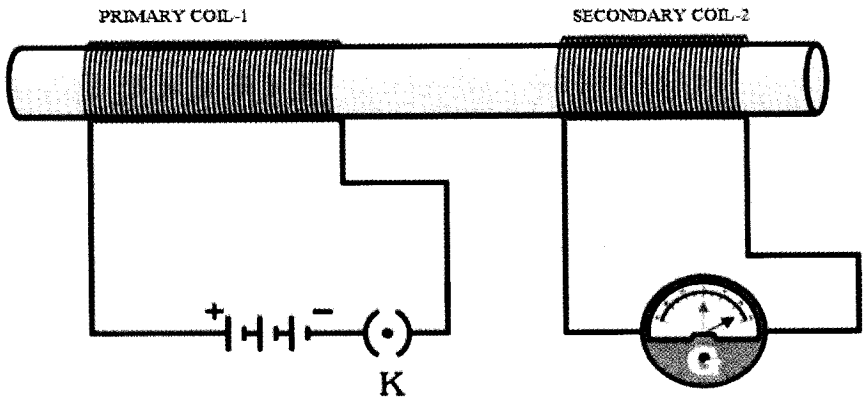

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(b) When current in the primary coil-1 is switched off.

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(c) Name and state the rule with which the direction of induced current can be determined from the above activity.

End of the Question Paper