Roll Number		

SET A

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

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

03.03.2022 | 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. The table shows different carbon compounds and answer the following questions. 2

compound	Formula
A	C_6H_6
B	C_5H_{10}
C	C_4H_{10}
D	C_3H_8

(a) Which compound has 13 covalent bonds?

(b) Which compound belongs to alkene homologous series?

(c) Which compound does not have isomer?

(d) Which compound gives sweet smelling aroma?

2. Consider the position of the following elements and answer the following questions. 2

Element	Position: Period/Group
A	3/2
B	4/1
C	2/14
D	3/15

(a) What is the atomic number and electronic configuration of element D?

(b) Which element is Potassium?

(c) Which element shows catenation?

3. Name the asexual method of reproduction in planaria. Explain the process by drawing diagram only. 2

4. Consider the following food chain 2

Grass → insect → frog → snake

(a) If in this food chain, 40000 J of energy is available at the producer level, then calculate the energy transferred to the snake as food.
(b) State the law used in the calculation.

OR

What is meant by 'non-biodegradable' waste? Identify biodegradable waste from the following: cotton clothes, glass bottle, wooden table, polythene bags.

5. (a) Mention the function of placenta. 2
(b) Why do some women experience unpleasant side effects on taking oral contraceptives?

OR

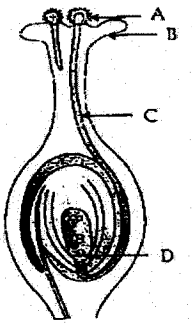
(a) Mention the function of testes.
(b)Why are testes located outside the abdominal cavity in scrotum?

6. (a) Why don't two magnetic field lines intersect each other? 2
(b) Draw magnetic field lines around a bar magnet.

OR

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

7. Observe the diagram and answer the following questions. 2
(a) Name the part marked 'A' in the diagram.
(b) How does 'A' reaches 'B'.
(c) State the importance of 'C'
(d) What happens to part 'D' after fertilization.



SECTION - B

8. (A) An atom has electronic configuration 2, 8, 7. 3
To which of the following elements would it be chemically similar?
(Atomic numbers are given in parentheses)
N (7) F (9) P (15) Ar (18)

(B) An element X (2, 8, 2) combines separately with $(NO_3)^-$ and $(PO_4)^{3-}$ radicals. Write the formulae of the two compounds so formed. Will it form covalent or ionic compound?

9. Write the electron dot structure for the following co-valent compounds. 3

(a) S_8 (b) CO_2 (c) O_2

OR

(a) What are the allotropes of carbon?

(b) Write any three properties of graphite

10. In a pea plant, the trait of flowers bearing purple colour (PP) is dominant over flowers bearing white colour (pp). 3

(a) Explain the inheritance pattern of F1 and F2 progeny with the help of a monohybrid cross following the rules of inheritance of traits.

(b) Give the phenotypic and genotypic ratio of the F2 progeny.

11. (a) State Ohm's law 3

(b) An electric iron of resistance 20 Ω takes a current of 5A. Calculate the heat developed in 30 s.

12. (a) Explain why tungsten is used for making filaments of electric lamps? 3

(b) A house is installed with the following appliances

(i) 2 bulbs of 50W each that works for 5h daily

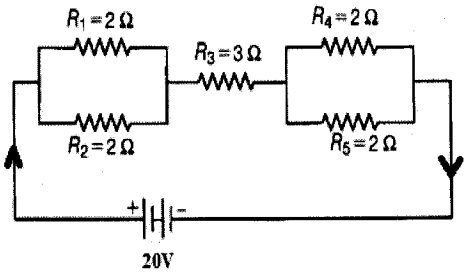
(ii) An electric iron of 1400W that is used for 2h daily.

Calculate the cost of electricity bill to be paid in the month of June if the unit price is Rs.4.00

OR

(a) Explain why series 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 20V



13. (a) What is the role of decomposers in the ecosystem? 3

(b) Write the full form of CFCs. Give its harmful effect on the environment.

(c) The following organisms form a food chain.

Insect, Hawk, Grass, Snake, Frog

(i) Which of these will have highest concentration of non-biodegradable chemicals?

(ii) Name the phenomenon.

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.

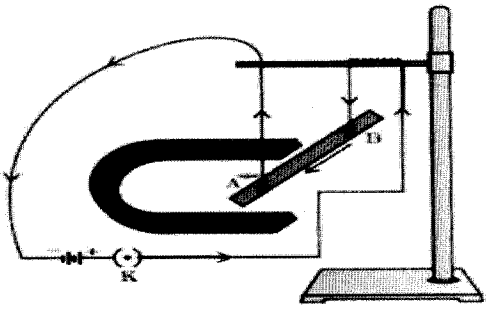
14. In some animals, the temperature at which fertilized eggs are kept determines whether the animal developing in the egg will be male or female. In other animals, such as snails, individuals can change sex that is sex is not genetically determined. In human beings, sex of individuals is largely genetically determined. All chromosomes in human beings are not paired. We have 22 pairs and one pair of sex chromosomes which is odd and not always a perfect pair. 4

(a) How many pairs of chromosomes are present in human beings?
(b) What is the genetic constitution of human sperm?
(c) "It is a matter of chance whether a couple will have a male or a female child." Justify this statement by drawing a flow chart.

OR

(i) How many chromosomes are present in human beings?
(ii) What are XY and XX chromosomes known as?
(iii) In humans, what is the probability of the birth of a boy? Justify your answer.

15. A current carrying metal rod is suspended freely between the poles of a strong horseshoe magnet as shown in the following figure. 4



(a) Mention any two inferences /conclusion that can be drawn from the above activity
(b) State the rule that helps to determine the direction of force acting on the conductor.
(c) State the principle behind the working of an electric motor

OR

What is the function of split rings in an electric motor?

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

03.03.2022 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. The table shows different carbon compounds and answer the following questions. 2

compound	Formula
A	C_6H_6
B	C_5H_{10}
C	C_4H_{10}
D	C_3H_8

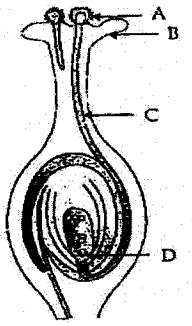
(a) Which compound has 13 covalent bonds?
(b) Which compound belongs to alkene homologous series?
(c) Which compound does not have isomer?
(d) Which compound gives sweet smelling aroma?

2. Find the compounds in the different homologous series by using the table. 2

General Formula	Compounds Name
C_nH_{2n+2}	Alkanes
C_nH_{2n}	Alkenes
C_nH_{2n-2}	Alkynes
$C_nH_{2n+2}O$	Alcohols

(a) Write the name of 3rd number of alkane and 4th member of alkene.
(b) Name the compound C_3H_8O and C_4H_6.

3. Observe the diagram and answer the following questions. 2



(a) Name the part marked 'A' in the diagram.
(b) How does 'A' reaches 'B'.
(c) State the importance of 'C'
(d) What happens to part 'D' after fertilization

4. (a) Mention the function of placenta. 2
(b) Why do some women experience unpleasant side effects on taking oral contraceptives?

OR

(a) Mention the function of testes.
(b)Why are testes located outside the abdominal cavity in scrotum?

5. Consider the following food chain 2

Grass → deer → fox → lion

(a) If in this food chain, 20000 J of energy is available at the producer level, then calculate the energy transferred to the lion as food.
(b) State the law used in the calculation.

OR

What is meant by 'Biodegradable' waste? Identify Non- biodegradable waste from the following: fruit and vegetable peels, polythene bags, jute bag, Aluminium can.

6. (a) Draw a neat diagram showing how magnetic field is produced around a current carrying straight conductor. 2
(b) Name the rule that helps to determine the direction of electric current and magnetic field based on the above diagram

OR

(a) Draw a neat diagram showing how magnetic field is produced around a current carrying circular coil.
(b) Name the rule that helps to determine the direction of electric current and magnetic field based on the above diagram

7. Name the asexual method of reproduction in hydra. Explain the process by drawing diagram only. 2

SECTION - B

8. Write the periodic trends of elements across a period and a group. (any three points) 3

9. Draw the structural formula of possible isomers of C_5H_{10} with its name. 3

OR

(a) Define Hydrocarbon.
(b) Give one example for each type of hydrocarbon.
(c) Name the compound with molecular formula CH_2O

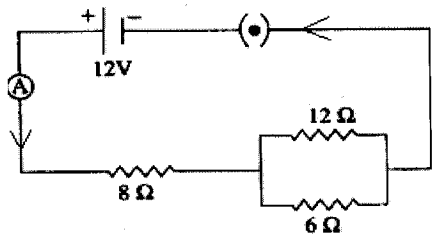
10. In a pea plant, the trait of seeds having yellow color (YY) is dominant over the seeds having green colour (yy). 3
(a) Explain the inheritance pattern of F1 and F2 progeny with the help of a monohybrid cross following the rules of inheritance of traits.
(b) Give the phenotypic and genotypic ratio of the F2 progeny.

11. (a) State Joules law of heating 3
(b) An electric bulb is rated at 80 W, 220 V. Calculate its resistance. If the voltage drops to 110 V, then calculate its power.

12. (a) What are the factors on which resistivity of a conductor depend? 3
(b) A wire of given material having length l and area of cross-section A has a resistance of 4 W. What would be the resistance of another wire of the same material having length $l/2$ and area of cross-section $2A$?

OR

(a) Define SI unit of current
(b) Calculate total current and effective resistance from the following electric circuit if the potential difference is 12V.



13. (a) What is the role of decomposers in the ecosystem? 3
(b) Why is the damage to the ozone layer a cause of concern?
(c) The following organisms form a food chain
Goat, man, plant
(i) Which of these will have highest concentration of non-biodegradable chemicals?
(ii) Name the phenomenon.

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. In some animals, the temperature at which fertilized eggs are kept determines whether the animal developing in the egg will be male or female. In other animals, such as snails, individuals can change sex that is sex is not genetically determined. In human beings, sex of individuals is largely genetically determined. All chromosomes in human beings are not paired. We have 22 pairs and one pair of sex chromosomes which is odd and not always a perfect pair. 4

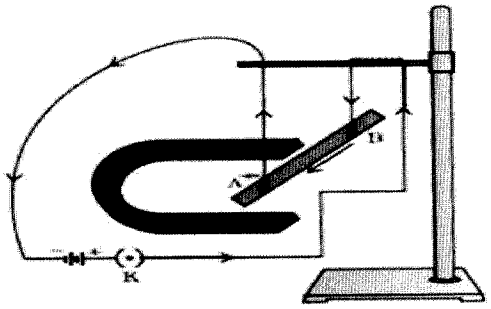
(a) How many pairs of chromosomes are present in human beings?
(b) What is the genetic constitution of human sperm?

(c) "It is a matter of chance whether a couple will have a male or a female child." Justify this statement by drawing a flow chart.

OR

(i) How many chromosomes are present in human beings?
(ii) What are XY and XX chromosomes known as?
(iii) In humans, what is the probability of the birth of a boy? Justify.

15. A current carrying metal rod is suspended freely between the poles of a strong horseshoe magnet as shown in the following figure. 4



(a) Mention any two inferences /conclusion that can be drawn from the above activity
(b) State the rule that helps to determine the direction of force acting on the conductor.
(c) State the principle behind the working of an electric motor

OR

What is the function of split rings in an electric motor?

End of the Question Paper

Roll Number		

SET C

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

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

03.03.2022 | 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.

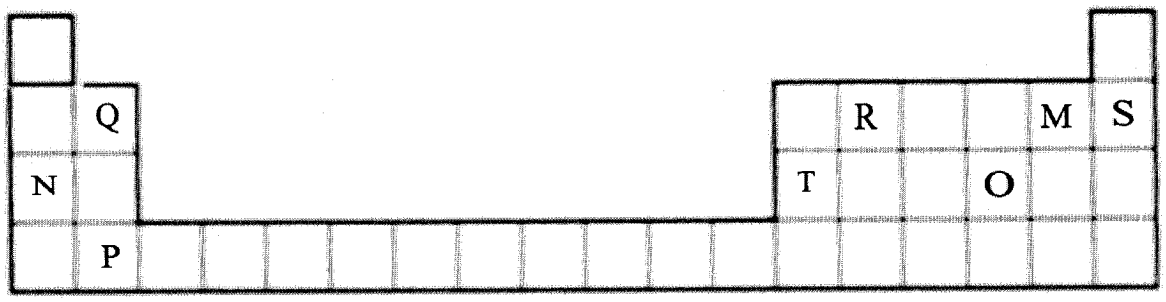
iv) Internal choices have been provided in some questions. A student has to attempt only one of the alternatives in such questions.

SECTION – A

1. Read the table carefully and identify the following. 2

(a) Which element has the largest atomic size and what is its name?

(b) What is the formula obtained when T & P reacts with M



2. Find the compounds in the different homologous series by using the table. 2

General Formula	Compounds Name
C_nH_{2n+2}	Alkanes
C_nH_{2n}	Alkenes
C_nH_{2n-2}	Alkynes
$C_nH_{2n+2}O$	Alcohols

(a) Write the name of 3rd member of alkane and 4th member of alkene.

(b) Name the compound C_3H_8O and C_4H_6.

3. Consider the following food chain 2

Plants → rabbit → snake → Hawk

(a) If in this food chain, 10,000 J of energy is available at the producer level, then calculate the energy transferred to the hawk as food.

(b) State the law used in the calculation.

OR

What is meant by 'non-biodegradable' waste? Identify biodegradable waste from the following: Glass bottle, fruit and vegetable peels, wooden table, Aluminium cans.

4. Name the asexual method of reproduction in amoeba. Explain the process by drawing diagram only. 2

5. (a) Mention the function of placenta. 2

(b) Why do some women experience unpleasant side effects on taking oral contraceptives?

OR

(a) Mention the function of testes.

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

6. (a) What do you mean by a solenoid? 2

(b) Draw magnetic field lines around a solenoid.

OR

(a) Why don't two magnetic field lines intersect with each other?

(b) Draw magnetic field lines around a bar magnet.

7. 2

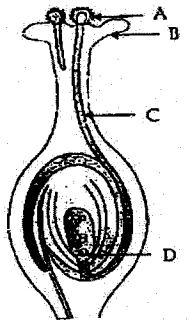
Observe the diagram and answer the following questions.

(a) Name the part marked 'A' in the diagram.

(b) How does 'A' reaches 'B'.

(c) State the importance of 'C'

(d) What happens to part 'D' after fertilization.



SECTION - B

8. (a) Define Dobereiner's triad with suitable example. 3

(b) What names were assigned to those elements which were not actually discovered during Mendeleev's periodic classification?

9. (a) Carbon never loose or gain electrons, but share electrons. Give your justification. 3

(b) Define homologous series.

OR

(a) Define Functional group.

(b) Give one example for each oxygen based functional group.

10. (a) What is the role of decomposers in the ecosystem? 3

(b) Which radiations are absorbed by ozone layer? Name chemicals responsible for depletion of ozone layer which are used as refrigerants and in fire extinguishers.

(c) The following organisms form a food chain.

Grasshopper, frog, grass, snake

(i) Which of these will have highest concentration of non-biodegradable chemicals?

(ii) Name the phenomenon.

11. (a) Why are coils of electric toasters made of an alloy rather than a pure metal? 3

(b) Derive the expression for effective resistance when three resistors are connected in series with the help of a neat circuit diagram.

12. (a) Define SI unit of power 3

(b) A house is installed with the following appliances

(i)10 bulbs of 50W each that works for 5h daily

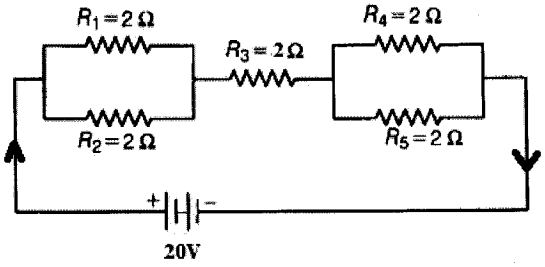
(ii) 5 fans of 70W each that runs for 10h daily.

Calculate the cost of electricity bill to be paid in the month of April if the unit price is Rs.3.00

OR

(a) Why are copper and aluminium wires employed for the transmission of electricity?

(b) Calculate total current and effective resistance from the electric circuit given below if the potential difference is 20V



13. In a pea plant, the trait of seeds having round shape (RR) is dominant over seeds having wrinkled shape (rr). 3

(a) Explain the inheritance pattern of F1 and F2 progeny with the help of a monohybrid cross following the rules of inheritance of traits.

(b) Give the phenotypic and genotypic ratio of the F2 progeny.

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.

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(a) How many pairs of chromosomes are present in human beings?
(b) What is the genetic constitution of human sperm?
(c) "It is a matter of chance whether a couple will have a male or a female child." Justify this statement by drawing sex determination flow chart.

OR

(i) How many chromosomes are present in human beings?
(ii) What are XY and XX chromosomes known as?
(iii) In humans, what is the probability of the birth of a boy? Justify your answer.

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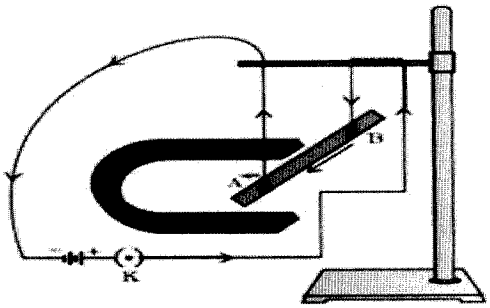

(a) Mention any two inferences /conclusion that can be drawn from the above activity
(b) State the rule that helps to determine the direction of force acting on the conductor.
(c) State the principle behind the working of an electric motor

OR

What is the function of split rings in an electric motor?

End of the Question Paper