

**Maharashtra State Board
Class X Science and Technology
Board Paper - 2014**

Time: 3 hrs**Max. Marks: 80****Note:**

1. Use the same answer-sheet for Section A and Section B.
2. Draw well-labelled diagrams wherever necessary.
3. All questions are compulsory.
4. Students should write the answers of questions in sequence.

SECTION A

1.**(A)**

(a) Rewrite the following statements with suitable words in the blanks: **[3]**

- i. Very fine particles mainly scatter coloured light.
- ii. The element eka-silicon in Mendeleev's periodic table is known as in the modern periodic table.
- iii. Sodium or potassium salt of higher fatty acid is termed

(b) State whether the following statements are True or False: **[2]**

- i. $\text{CuSO}_{4(aq)} + \text{Zn}_{(s)} \rightarrow \text{ZnSO}_{4(aq)} + \text{Cu}_{(s)}$ is an example of a decomposition reaction.
- ii. Magnetic lines of force are closed continuous curves.

(B) Rewrite the following statements by selecting the correct options: **[5]**

- i. The reddish brown deposit formed on iron nails kept in a solution of copper sulphate is
 - (a) Cu_2O
 - (b) Cu
 - (c) CuO
 - (d) CuS
- ii. What will be the change in the current if the potential difference is kept constant and the resistance of the circuit is made four times?
 - (a) It will remain unchanged.
 - (b) It will become four times.
 - (c) It will become one-fourth.
 - (d) It will become half.
- iii. A ray of light strikes the glass slab at an angle of 50° . What is the angle of incidence?
 - (a) 50°
 - (b) 25°
 - (c) 40°
 - (d) 100°

- iv. From which plant is litmus paper or litmus solution obtained?
 - (a) Moss
 - (b) Rose
 - (c) *Hibiscus*
 - (d) Lichen
- v. If the equivalent resistance is to be increased, then the number of resistances should be connected in
 - (a) Series
 - (b) Parallel
 - (c) Mixed arrangement
 - (d) None of the above

2. Answer any five of the following:

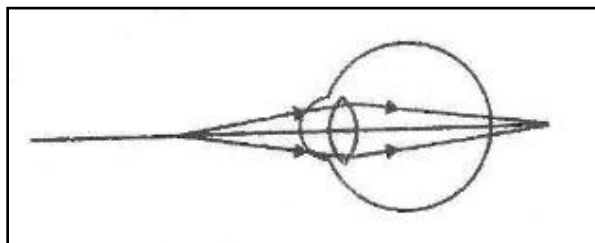
[10]

- i. Elements in the same group show the same valency. Give scientific reason.
- ii. Find the resistance of a conductor if 0.24 A current is passing through it and a potential difference of 24 V is applied across it.
- iii. Differentiate between primary pollutants and secondary pollutants.
- iv. Write the electronic configuration of K and Ne.
- v. State Fleming's right-hand rule.
- vi. Write a short note on dispersion of light.

3. Answer any five of the following: [15]
- State three differences between direct current and alternating current.
 - After you have dinner tonight, wash your own plates with soap/detergent.
 - What colour change is observed when soap/detergent is applied?
 - Name the type of reaction and explain it.
 - Methyl orange is used as an indicator. It shows colour change in acid, base and neutral substance. Tabulate your result as follows:

Indicator	Colour change	Inference
Methyl Orange	No change
	Acid
	Yellow

- iv. Given below is a diagram showing a defect of the human eye. Study it and answer the following questions:



- Name the defect shown in the figure.
 - Give two possible reasons for this defect of the eye in human being.
 - Name the type of lens used to correct the eye defect.
- State three effects of radioactive pollution.
 - Define refraction and state the laws of refraction.
4. Attempt any one of the following: [5]
- With a neat labelled diagram and derive the equation for three resistances connected in parallel.
 - With the help of an appropriate ray diagram, state the sign conventions for reflection by a spherical mirror.

SECTION B

5.

(A)

(a) Find the odd one out: **[2]**

- i. Pancreas, Gall bladder, Glomerulus, Liver
- ii. C_2H_4 , C_4H_{10} , C_3H_8 , CH_4

(b) Match the following: **[3]**

Column A	Column B
(i) Stigma	(a) Neuron
(ii) Pepsin	(b) Carpel
(iii) Dendrites	(c) Protein
	(d) Stamen

(B) Rewrite the following statements by selecting the correct options: **[5]**

- i. Iron is
 - (a) More reactive than zinc
 - (b) More reactive than aluminium
 - (c) Less reactive than copper
 - (d) Less reactive than aluminium
- ii. is a mode of asexual reproduction.
 - (a) Cloning
 - (b) Budding
 - (c) Pollination
 - (d) Germination
- iii. The percentage of water absorbed by raisins is calculated on dividing by initial weight.
 - (a) Final weight
 - (b) Increased weight
 - (c) Decreased weight
 - (d) None of the above
- iv. Cellular respiration takes place in
 - (a) Lysosome
 - (b) Chlorophyll
 - (c) Mitochondria
 - (d) Ribosome
- v. is not essential for photosynthesis.
 - (a) Oxygen
 - (b) Carbon dioxide
 - (c) Light
 - (d) Chlorophyll

6. Answer any five of the following: [10]
- Give any two differences between alkanes and alkenes.
 - Write two methods of preventing the rusting of iron.
 - Write the functions of the following organs of reproduction:
 - Ovaries
 - Seminal vesicle and prostate glands
 - Draw a neat labelled diagram of vertical section of the human heart.
 - Write a short note on pressure cooker.
 - Explain the term haemodialysis.

7. Answer any five of the following: [15]
- Give the IUPAC names of the following compounds:
 - $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$
 - HCOOH
 - $\text{CH}_3-\text{CH}=\text{CH}-\text{CH}_3$
 - Classify the following as voluntary and involuntary actions:
 - Coughing
 - Food getting digested
 - Moving a table
 - Kicking a ball
 - Beating of heart
 - Flying a kite
 - What is the three 'R' mantra? Write its significance.
 - What do you mean by DNA? What is the peculiarity of its structure? Name the scientist who put forward the most popular model of DNA.
 - Complete the following table to get the differences between asexual and sexual reproduction:

Characteristics	Asexual Reproduction	Sexual Reproduction
Number of parents involved
Type of cells involved	Somatic cells	Germ cells
Type of cell division	Meiosis and mitosis

- vi. Classify the types of neurons and state their functions.

- 8.** Attempt any one of the following: **[5]**
- (a) In the extraction of aluminium:
- i. Name the process of concentration of bauxite.
 - ii. Write the cathode reaction in electrolytic reduction of alumina.
 - iii. Write the function and formula of cryolite in the extraction of aluminium.
 - iv. Draw the diagram for the extraction of aluminium.
- (b) Answer the following questions related to sex determination in human beings:
- i. What is sex chromosome?
 - ii. How many pairs of chromosomes are present in human beings?
 - iii. How is the sex of the human offspring determined?
 - iv. Draw a diagram depicting sex determination in man.