SECTION A

1. (A) (a) Rewrite the following statements with suitable words in the blanks: [2]
   i. 1 calorie = _______ joule.
   ii. The arrangement of elements in a group of three is known as _______.

(b) State whether the following statements are true or false: [2]
   i. Pollen, Bacteria, Fungal spores are also pollutants.
   ii. Magnetic lines of force always cross each other.

(c) Taking into consideration the relationship in the first pair, complete the second pair: [1]
   \[2H_2 + O_2 \rightarrow 2H_2O : \text{Combination Reaction} \rightarrow 2HgO \rightarrow 2Hg + O_2 : _______.\]

(B) Rewrite the following statements by selecting the correct options: [5]
   i. When crystals of copper sulphate are strongly heated, the residue obtained is _______.
      (A) red in colour   (B) blue in colour
      (C) green in colour  (D) colourless
   ii. Which type of mirror is used by a dentist?
      (A) Plane     (B) Convex
      (C) Concave    (D) Both (B) and (C)
   iii. The equivalent resistance of the parallel combination of two resistors of 60 Ω and 40 Ω is
      (A) 24 Ω   (B) 100 Ω
      (C) 50 Ω   (D) 240 Ω
   iv. The litmus paper or the litmus solution is obtained from _______ plant.
      (A) Moss    (B) Lichen
      (C) Rose    (D) Hibiscus
   v. Which substance when used with butter having butyric acid can cure acidity?
      (A) Lime water    (B) Soda water
      (C) Calcium carbonate  (D) Lime juice

2. State any five of the following: [10]
   i. State Newlands law of Octaves.
   ii. State the right hand thumb rule.
   iii. If a bulb of 60 W is connected across a source of 220 V, find the current drawn by it.
   iv. Draw a neat and labelled diagram of structure of the human eye.
   v. Define:
      a. Radius of curvature of spherical mirror.
      b. Focal length of spherical mirror.
   vi. Give scientific reason:
      The sun appears reddish early in the morning.
3. **Answer any five of the following:**
   i. Write the merits of the modern periodic table over Mendeleev’s Periodic table.
   ii. What is redox reaction? Explain with one example.
   iii. What is Resistivity? Write the formula of resistivity. Write the SI unit of resistivity.
   iv. Distinguish:
      Degradable pollutants – Non-degradable pollutants. (any Three points.)
   v. Kavita from 10\(^{th}\) is using spectacles. The power of the lenses in her spectacles is –2.5 dioptre.
      Answer the following questions:
      a. Which lenses are used in her spectacles?
      b. State the defect of vision Kavita is suffering from.
      c. Find the focal length of the lenses used in her spectacles.
   vi. Write the chemical name of bleaching powder and write its properties.

4. **Answer any one of the following:**
   i. Explain the construction and working of an electric motor.
   ii. What is refraction of light? Draw the diagram of refraction of light in glass slab. Write the laws of refraction.