BOARD QUESTION PAPER : JULY 2016
SCIENCE AND TECHNOLOGY

Time: 2 Hours   **Total Marks: 40**

Note:
i. Draw well-labelled diagrams wherever necessary.
ii. All questions are compulsory.
iii. Students should write the answers of questions in sequence.

SECTION A

Q.1. (A) Answer the following sub-questions:

    (a) Fill in the blanks and rewrite the completed statements.   **[2]**
        i. To increase the effective resistance in a circuit the resistors are connected in _____.
        ii. The phenomenon of splitting of light into its component colours is _____

    (b) State whether the following statements are true or false: **[2]**
        i. Phenolphthalein is a synthetic type of indicator.
        ii. The chemical reactions in which heat is liberated are called endothermic reactions.

    (c) Name the following: **[1]**
        The instrument used to observe planets.

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

i. When the resistance of a conductor increases, the current _____.
    (A) increases   (B) decreases
    (C) remains the same   (D) increases or decreases

ii. The phenomenon of change in the direction of light when it passes from one transparent medium to another is called _____ .
    (A) Dispersion   (B) Scattering
    (C) Refraction   (D) Reflection

iii. When _____ is passed through fresh lime water, it turns milky.
    (A) H_2 (B) CO_2
    (C) CO   (D) SO_2

iv. A _____ mirror is used by a dentist.
    (A) Concave   (B) Convex
    (C) Plane   (D) None of the above

v. The equivalent resistance of a parallel combination of two resistors of 30 Ω and 60 Ω is _____.
    (A) 90 Ω   (B) 2 Ω
    (C) 20 Ω   (D) 1800 Ω

2. Attempt any five of the following: **[10]**

i. The velocity of light in a medium is 1.5×10^8 m/s. What is the refractive index of the medium with respect to air, if the velocity in the air is 3×10^8 m/s?

ii. Give scientific reason:
    Grills of doors and windows are always painted before they are used.

iii. Write a short note on Eutrophication.

iv. Classify the given elements into metals, non-metals and metalloids. Carbon, Boron, Sodium, Oxygen

v. State Fleming's Right Hand Rule.

vi. Distinguish between oxidation and reduction.

3. **Attempt any five of the following questions:** [15]

i. Aniket from Std. X uses spectacles. The power of the lenses in his spectacles is –0.5 dioptre. Answer the following questions:
    a. State the type of lenses used in his spectacles.
    b. Name the defect of vision Aniket is suffering from.
    c. Find the focal length of the lenses used in his spectacles.

ii. What are the demerits of Mendeleev's periodic table?

iii. Explain how the formation of the rainbow occurs.

iv. State the different positions of the source of light with respect to the concave mirror in:
    a. torches
    b. projector lamps
    c. flood lights

v. What major harms are done to human beings due to air pollution?

vi. Explain: pH scale with proper diagram.

4. **Attempt any one of the following:** [5]

i. When do you say that the resistors are connected in series? Find the expression for the resistors connected in this way. Draw a circuit diagram.

ii. Explain the construction and working of an electric generator (AC) with the help of a neat diagram.