

# 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<sub>2</sub> (B) CO<sub>2</sub>  
(C) CO (D) SO<sub>2</sub>
- 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  $1.5 \times 10^8$  m/s. What is the refractive index of the medium with respect to air, if the velocity in the air is  $3 \times 10^8$  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.