



# BOARD QUESTION PAPER : MARCH 2015

## SCIENCE AND TECHNOLOGY

Time: 3 Hours

Total Marks: 80

(This Board paper is as per old Question paper format.)

**Note:**

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

**SECTION A**

1. (A) (a) Rewrite the following statements with suitable words in the blanks: [2]

- The device used for producing electric current is called a \_\_\_\_\_.
- \_\_\_\_\_, the second layer of the atmosphere reaches 48 km above the earth's surface.

- (b) Rewrite the following table so as to match the second column with the first column: [2]

	Column A		Column B
i.	eosin	1.	losing hydrogen
ii.	oxidation	2.	synthetic indicator
		3.	losing oxygen
		4.	natural indicator

- (c) Give the molecular formula of bleaching powder. [1]

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

- When phenolphthalein is added to NaOH, the colour of the solution will become:  
(A) colourless (B) red  
(C) pink (D) yellow
- If the potential difference across the ends of a conductor is 220 V and the resistance of the conductor is 44  $\Omega$  (ohm), then the current flowing through is:  
(A) 0.2 A (B) 0.5 A  
(C) 2 A (D) 5 A
- 1 A = \_\_\_\_\_ mA  
(A)  $10^2$  (B)  $10^3$   
(C)  $10^{-3}$  (D)  $10^{-6}$
- The distance between principal focus and optical centre of the lens is:  
(A) diameter (B) focal length  
(C) principal axis (D) optical centre
- When rays of light are incident on a glass slab, then the incident ray and emergent ray are \_\_\_\_\_ to each other.  
(A) perpendicular (B) parallel  
(C) opposite (D) concurrent

2. Answer any five of the following: [10]

- Give scientific reason: Danger signals are red in colour.
- Complete the following reaction, balance it and write the name of the products:  
 $\text{CuO} + \text{HCl} \rightarrow \underline{\hspace{2cm}} + \underline{\hspace{2cm}}$
- State Newlands' Law of Octaves.
- 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 air is  $3 \times 10^8$  m/s?
- Differentiate between resistances in series and parallel.
- Draw a ray diagram for concave mirror when the object is between centre of curvature and focus.



3. Answer any five of the following: [15]
- Explain the role of citizen in pollution control.
  - What is a spectrum? Why do we get a spectrum of seven colours when white light is dispersed by a prism?
  - State four most common electrical appliances based on heating effect of electric current. Why do we use finely heated platinum wire in surgery?
  - Name the product obtained when Plaster of Paris is mixed with water. State the use of the product. Give two uses of POP.
  - Classify the following elements into metals, non-metals and metalloids: C, Mg, Si, S, Hg, As.
  - Complete the following:

a. =  $\Omega$

b. =  $\Omega$

c. =  $\Omega$

4. Attempt any one of the following: [5]
- (A) Often when electricity is used we come across electrical fires caused. Answer the following questions related to the following terms:
- When does short circuiting take place?
  - What happens to the resistance of the circuit during a short circuit?
  - What happens to the flow of electric current during a short circuit?
  - What is overloading?
  - How can the effects of overloading be avoided?
- (B) In a Std X class, out of 40 students, 10 students use spectacles, 2 students have positive power and 8 students have negative power of lenses in their spectacles. Answer the following questions:
- What does the negative power indicate?
  - What does the positive power indicate?
  - Generally which type of spectacles do most of the students use?
  - What defect of eyesight do most of the students suffer from?
  - Give two possible reasons for the above defect.

### SECTION B

5. (A) (a) Find the correlation in the given pair and rewrite the answer: [2]
- Tinning : Tin :: Galvanizing : \_\_\_\_\_.
  - Mammals : \_\_\_\_\_ :: Amphibia : Fishes.
- (b) State True or False: [3]
- Solar water-heater works on renewable energy system.
  - In human beings, the blood goes to the heart in one cycle once.
  - In frogs, thyroid secretion stimulates the metamorphosis from tadpole to adult frog.
- (B) Rewrite the following statements by selecting the correct options: [5]
- The molecular formula of acetic acid is \_\_\_\_\_.  
 (A)  $\text{CH}_3\text{COOH}$  (B)  $\text{CH}_3 - \text{CH}_3$   
 (C)  $\text{C}_6\text{H}_6$  (D)  $\text{C}_2\text{H}_4$
  - Carbon dioxide enters into the leaves through tiny pores present on the surface of the leaf called \_\_\_\_\_.  
 (A) chlorophyll (B) chloroplast  
 (C) stomata (D) epidermis



- iii. \_\_\_\_\_ solution is blue in colour.
- (A)  $\text{CuSO}_4$  (B)  $\text{FeSO}_4$   
(C)  $\text{ZnSO}_4$  (D)  $\text{Al}_2(\text{SO}_4)_3$
- iv. Yeast reproduces by \_\_\_\_\_.
- (A) spore formation (B) multiple fission  
(C) fragmentation (D) budding
- v. Raisins put in water absorb water by the process of \_\_\_\_\_.
- (A) diffusion (B) osmosis  
(C) transpiration (D) excretion

**6. Solve any five of the following:****[10]**

- Give scientific reason: Common salt has high melting point and boiling point.
- Draw neat labelled diagram of the Pancreas with their associated structures.
- State the connecting links between Peripatus with Annelida and Arthropoda.
- Name the two plant hormones and state their functions.
- Differentiate between Toilet soap and Laundry soap.
- State any four objectives of sustainable development.

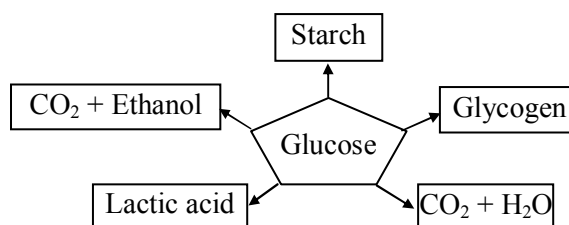
**7. Answer any five of the following:****[15]**

- What is an alloy? Give two examples with their chemical composition.
- Name the following:
  - Cells that assist the neuron in their function.
  - The small gap between the consecutive neurons.
  - Part of the brain that co-ordinates the voluntary functions.
- Explain the process of fertilization, development and birth in human beings.
- What are vestigial organs? Give two examples each in human beings and plants.
- What is recycling of waste? Explain with one example. State two advantages of recycling.
- Which mode of reproduction gives rise to variation? Give the importance of variation in survival of species.

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

(A) Given below are the end products of different reactions involving glucose. Write the appropriate end product in front of the following:

- Anaerobic reaction =
- Reaction in human muscles =
- Aerobic respiration =
- Reaction in plant cells =
- Reaction in liver =



(B) Answer the following questions:

- Give other two names of ethanol. 1
- Give the structural formula of ethanol. 1
- Give two properties of ethanol. 1
- Explain the action of phosphorus trichloride with ethanol. Write the balanced chemical equation of the above reaction. 2