BOARD QUESTION PAPER : MARCH 2014
SCIENCE AND TECHNOLOGY

Time: 3 Hours **Marks: 80**

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

SECTION A

Q.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 as _____.

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

i. $CuSO_{4(aq)} + Zn_{(s)} \rightarrow ZnSO_{4(aq)} + Cu_{(s)}$ is an example of 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 resistance should be connected in:
(A) series (B) parallel
(C) mixed arrangement (D) none of the above

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

i. Elements in the same group show same valency. Give scientific reason.
ii. Find the resistance of a conductor if 0.24 A current is passing through it and 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.

Q.3. Answer any five of the following: **[15]**

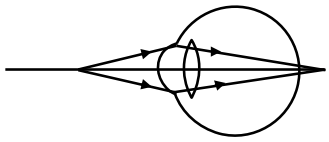
i. State three differences between Direct current and Alternating current.

ii. After you have dinner tonight, wash your own plate with soap/detergent.
   1. What colour change is observed when soap/detergent is applied?
   2. Name the type of reaction and explain it.

iii. Methyl orange is used as an indicator. It shows colour changes in acid, base and neutral substance. Tabulate your results are follows:

Indicator	Colour Change	Inference
Methyl Orange	No change	–
	–	Acid
	Yellow	–

iv. Given below is a diagram showing a defect of human eye.



Study it and answer the following questions:
   a. Name the defect shown in the figure.
   b. Give two possible reasons for this defect of eye in human being.
   c. Name the type of lens used to correct the eye defect.

v. State three effects of Radioactive pollution.

vi. Define refraction and state the laws of refraction.

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

i. With a neat labelled diagram derive the equation for three resistances connected in parallel.

ii. With the help of appropriate ray diagram, state the sign convention for reflection by spherical mirror.

SECTION B

Q.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) Pollinating (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]**

i. Give any two differences between Alkane and Alkene.
ii. Write two methods of preventing the rusting of iron.
iii. Write the functions of the following organs of reproduction:
   a. Ovaries
   b. Seminal vesicle and prostate glands.
iv. Draw a neat labelled diagram of vertical section of the human heart.
v. Write a short note on 'Pressure Cooker'.
vi. Explain the term 'Haemodialysis'.

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

i. Give the IUPAC name of the following compounds:

(A) $CH_3CH_2CH_2OH$ (B) HCOOH
(C) $CH_3 - CH = CH - CH_3$

ii. Classify the following as voluntary and involuntary actions:

(A) Coughing (B) Food getting digested
(C) Moving a table (D) Kicking a ball
(E) Beating of heart (F) Flying a kite.

iii. What is the three 'R mantra'? Write its significance.

iv. 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.

v. Complete the following table to get the difference 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 of 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 there in human beings?
iii. How is the sex of the human offspring determined?
iv. Draw a diagram depicting sex determination in man.