

BOARD QUESTION PAPER: July 2019

Science and Technology Part - 1

Time: 2 Hours

Total Marks: 40

Note:

- i. All questions are compulsory.
- ii. Draw scientifically, technically correct labelled diagrams wherever necessary.
- iii. Start writing each main question on new page.
- iv. Figures to the right indicate full marks.
- v. For each MCQ (i.e. Q. No. 1-B) evaluation would be done for first attempt only.
- vi. For each MCQ correct answer must be written along with its alphabet.

Eg.: (i) (a)....., (ii) (b), (iii) (c)

Q.1. (A) Solve the following questions: [5]

i. Fill in the blank and rewrite the sentence: (1)

The initial velocity (during launching) of the Mangal-Yaan must be greater than _____ of the earth.

ii. Match the pairs: (2)

	Group 'A'		Group 'B'
i.	Ethanol	a.	Hydrogen peroxide
ii.	Methane	b.	Tincture iodine
		c.	Biogas
		d.	Non-stick cookware

iii. Write co-relation: (1)

Molecular formula of beryllium oxide: BeO :: Molecular formula of beryllium chloride : _____

iv. Write whether the following statement is true or false: (1)

Simple microscope is used for watch repairs.

(B) Choose the correct alternative and rewrite the statement: [5]

i. Combustion of coal in air is a _____ reaction.

- (A) combination (B) displacement
(C) decomposition (D) double displacement

ii. When electric current is passed through the solenoid, it shows magnetic lines of force similar to a _____.

- (A) bar magnet (B) horse shoe magnet
(C) disk magnet (D) spherical magnet

iii. The crystals of ferrous sulphate are _____.

- (A) Blue in colour (B) Pink in colour
(C) Pale green in colour (D) Colourless

iv. A laser beam enters from air to soap solution in water then _____.

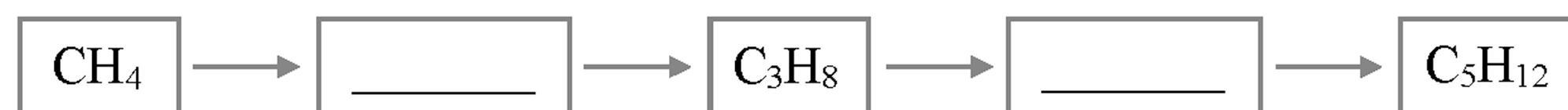
- (A) it goes away from the normal (B) it bends towards the normal
(C) it travels straight without bending (D) it returns back into air

v. When temperature of water is reduced below _____ °C, it expands.

- (A) 0 (B) 4 (C) 5 (D) 12

Q.2. Solve the following questions (any five):**[10]**

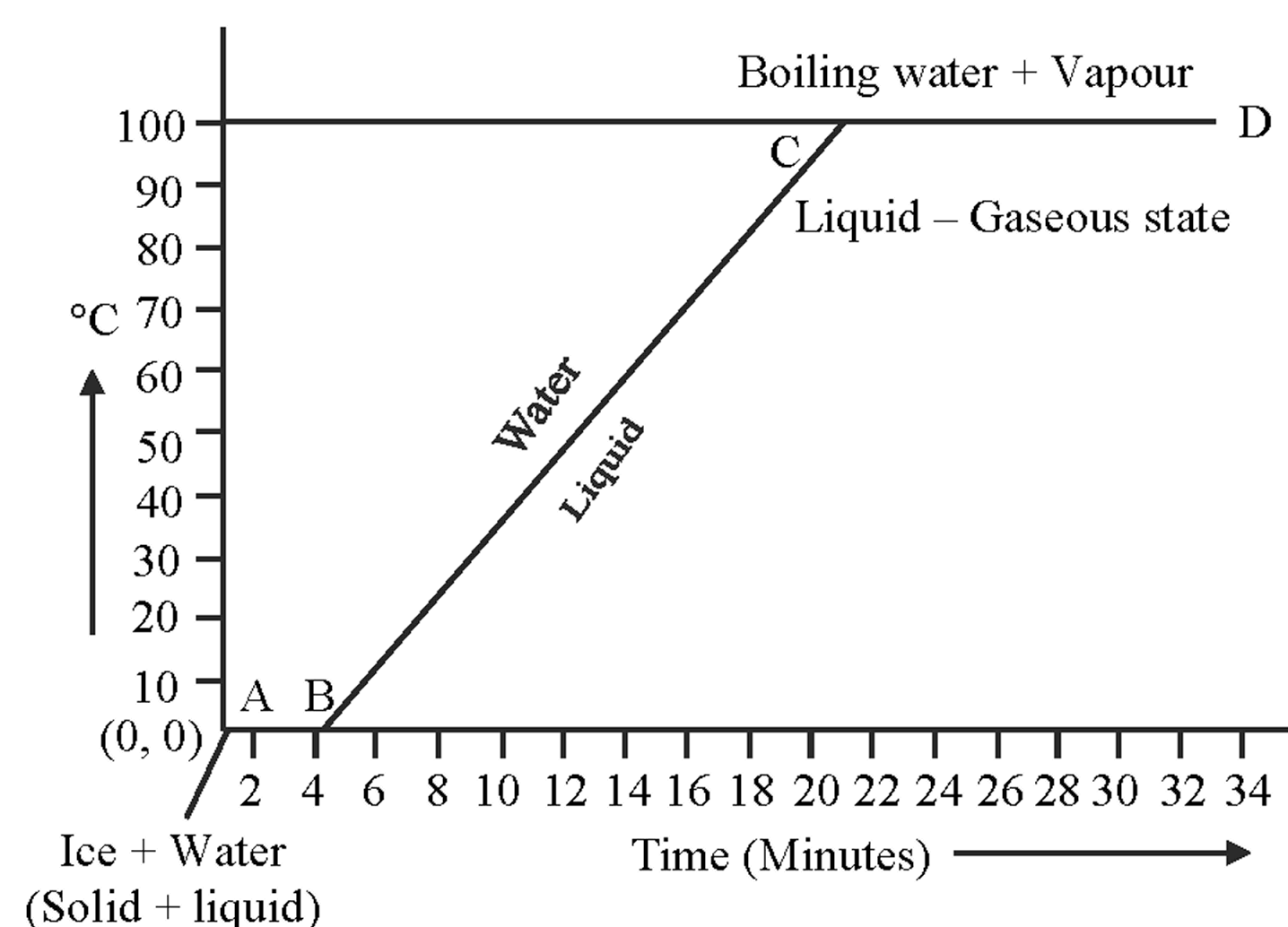
- If mass of a planet is eight times the mass of the earth and its radius is twice the radius of the earth, what will be the ratio of escape velocity of earth to the escape velocity on the planet?
- Explain why value of g changes if we go inside the earth.
- Complete the following flowchart and write the general formula of alkane:



- What is a geostationary satellite? Why are geostationary satellites not useful for studies of polar region?
- If the speed of light in a medium is 1.5×10^8 m/s, what is the absolute refractive index of the medium? (Velocity of light in vacuum 3×10^8 m/s)
- In two methods of control of corrosion of aluminium, either a layer of aluminium oxide is formed or a silver plating is done on the surface. State to which electrode the aluminium article is attached in these methods respectively.
- Write down any two rules used for drawing ray diagrams for the formation of image by convex lens.

Q.3. Solve the following questions (any five):**[15]**

- An object thrown vertically upwards reaches a height of 500 m. What was its initial velocity? How long will the object take to come back to the earth? ($g = 10 \text{ m/s}^2$)
- Explain the similarity and difference in two events namely adding NaOH to water and adding CaO to water.
- Observe the following reaction carefully and answer the sub-questions:
 $\text{NH}_3 + \text{HCl} \longrightarrow \text{NH}_4\text{Cl}$
 - What are the salt and acid in the above reaction?
 - Which is the base in the above reaction? It is weak or strong?
 - Write a reaction showing dissociation of this base in water.
- Explain the following temperature Vs. time graph:

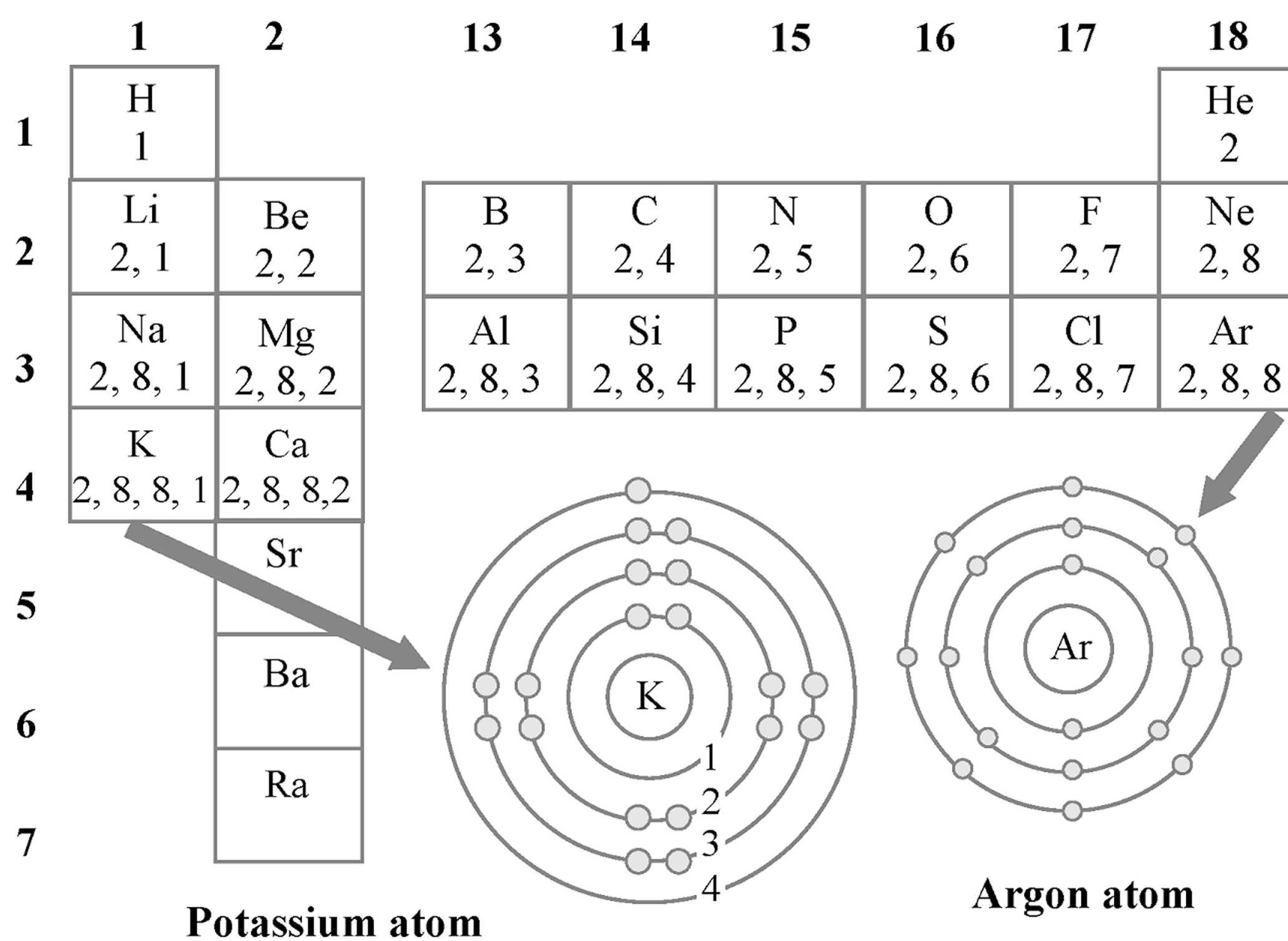


- Doctor has prescribed a lens having power +1.5 D for correction of eye defect. What will be the focal length of the lens? What is the type of the lens and what must be the defect of vision?
- Give scientific reason:
Anodes need to be replaced from time to time during the electrolysis of alumina.
- What is meant by Vinegar and Gashol? What are their uses?

Q.4. Solve the following questions (any one):

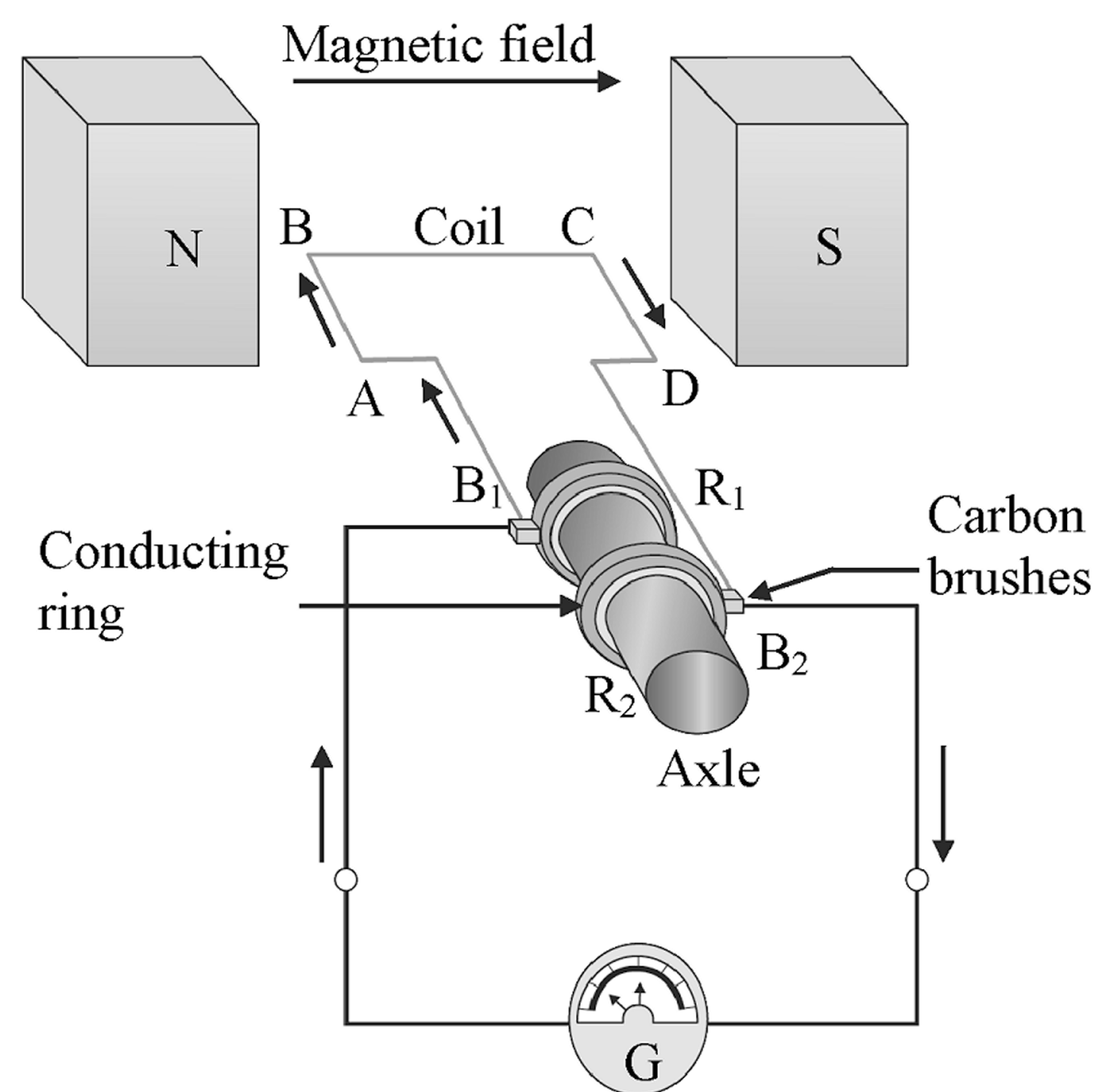
[5]

i. Observe the following diagram and write the answers of the following questions:



- Write the atomic numbers of first two elements in the second group.
- Write the number of valence electrons of the elements in the halogen group.
- Draw the diagram of electronic configuration of magnesium atom.
- After completion of a period, what change does take place in the electronic configuration of the next element?
- Write the names of any two elements from the diagram which do not take part in chemical reaction.

ii. Observe the following diagram and write the answers of the given sub-questions:



- Which instrument the above figure shows?
- Which rule is used to determine the direction of the current produced?
- State the rule.
- In which direction (B_1 to B_2 or B_2 to B_1) will the current flow in the external circuit in that situation?
- What change will have to be made in the coil for increasing the current several times without changing the magnet?