

# BOARD QUESTION PAPER: MARCH 2019

## SCIENCE AND TECHNOLOGY PART – 1

**Time: 2 Hours**

**Total Marks: 40**

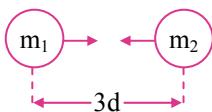
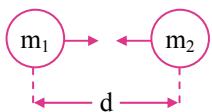
**Note:**

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

**1. (A) Answer the following questions:**

[5]

- Write proper answer in the box:



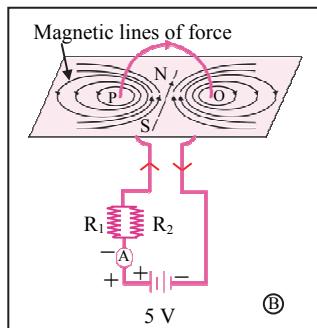
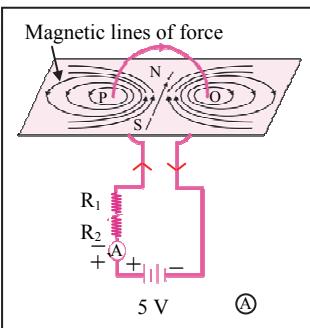
$$\text{If } F = \frac{Gm_1m_2}{d^2}, \quad \text{then } F = \boxed{\quad}$$

- In Dobereiner's triads Li, Na, K, the atomic masses of Lithium and Potassium are 6.9 and 39.1 respectively, then what will be the atomic mass of sodium.
- State whether the given statement is true or false:  
A concave lens is a converging lens.
- By considering first correlation complete the second correlation:  
Hubble telescope: 569 km high from earth surface  
Revolving orbit of Hubble telescope:
- Find the odd man out:  
Tinning, Anodization, Alloying, Froth floatation.

**(B) Choose the correct alternative:**

[5]

- The reaction of iron nail with copper sulphate solution is \_\_\_\_\_ reaction.
  - Combination
  - Decomposition
  - Displacement
  - Double displacement
- Observe the following diagram and choose the correct alternative:



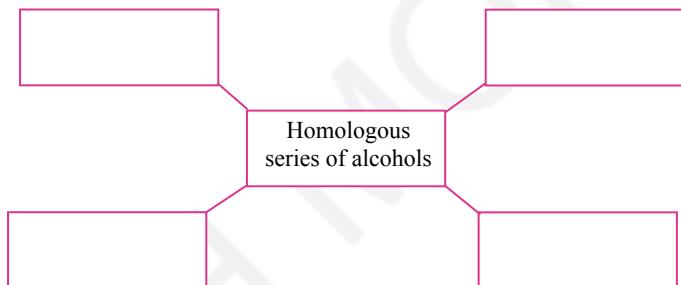
- The intensity of magnetic field in A is larger than in B.
- The intensity of magnetic field in B is less than in A.
- The intensity of magnetic field in A and B is same.
- The intensity of magnetic field in A is less than in B.

3. A ray of light makes an angle of  $50^\circ$  with the surface  $S_1$  of the glass slab. Its will be \_\_\_\_\_.
- (A)  $50^\circ$  (B)  $40^\circ$   
 (C)  $140^\circ$  (D)  $0^\circ$
4. Water expands on reducing its temperature below \_\_\_\_\_  $^{\circ}\text{C}$ .
- (A) 0 (B) 4  
 (C) 8 (D) 12
5. The carbon compound is used in daily life is \_\_\_\_\_.
- (A) Edible oil (B) Salt  
 (C) Carbon dioxide (D) Baking soda

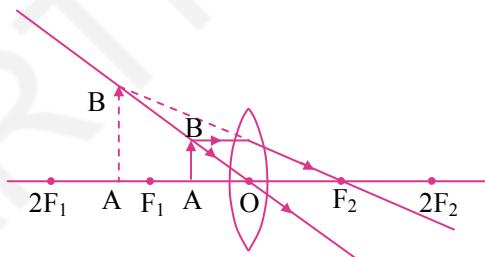
**2. Attempt any five of the following questions:**

[10]

- Two tungsten bulbs of power 50 W and 60 W work on 220 V potential difference. If they are connected in parallel, how much current will flow in the main conductor?
- Give scientific reason:  
In the electric equipment producing heat e.g. iron, electric heater, boiler, toaster etc., an alloy such as Nichrome is used, not pure metals.
- A metal ball of mass 5 kg falls from a height of 490 m. How much time it will take to reach the ground? ( $g = 9.8 \text{ m/s}^2$ )
- Write names of first four homologous series of alcohols:



- Observe the following figure and complete the table:



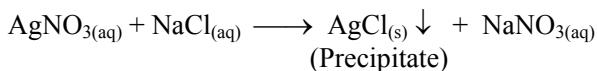
	Points	Answers
i.	Position of the object	
ii.	Position of the image	
iii.	Size of the image	
iv.	Nature of the image	

- Out of sodium and sulfur which is a metal? Explain its reaction with the oxygen.
- A tapping vessel opens in a tank like container that is tapering on the lower side. The tank has an outlet for water on the upper side and a water inlet on the lower side. Finely ground ore is released in the tank. A forceful jet of water is introduced in the tank from lower side and gangue particles and pure ore are separated by this method.
  - The above description is of which gravitation separation method?
  - Draw labelled diagram of this method.

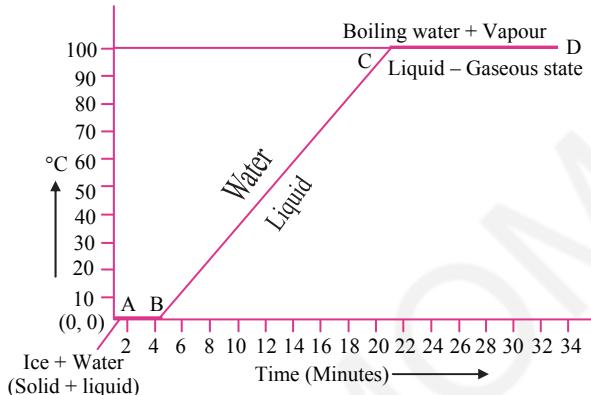
**3. Attempt any five of the following questions:**

[15]

1. What would be the value of 'g' on the surface of the earth if its mass was twice and its radius half of what it is now?
2. Write merits of Mendeleev's periodic table.
3. Study the following chemical reaction and answer the questions given below:



- i. Identify and write the type of chemical reaction.
- ii. Write the definition of above type of chemical reaction.
- iii. Write the names of reactants and products of above reaction.
4. Explain the following temperature Vs time graph:



5. Surabhi from std. X uses spectacle. The power of the lenses in her spectacle is 0.5 D. Answer the following questions from the given information:
  - i. Identify the type of lenses used in her spectacle.
  - ii. Identify the defect of vision Surabhi is suffering from.
  - iii. Find the focal length of the lenses used in her spectacle.
6. Complete the following table:

Sr. No.	Common Name	Structural Formula	IUPAC Name
1.	Ethylene	$\text{CH}_2 = \text{CH}_2$	.....
2.	.....	$\text{CH}_3\text{COOH}$	Ethanoic acid
3.	Methyl alcohol	.....	Methanol

7. What is meant by space debris? Why there is need to manage the debris?

**Q.4. Answer any one of the following questions:**

[5]

1. Taking into consideration the period of the elements given below, answer the following questions:

Elements	Atomic Radius (pm)
O	66
B	88
C	77
N	74
Be	111
Li	152

- i. Arrange the above elements in a decreasing order of their atomic radii.
- ii. State the period to which the above elements belong.
- iii. Why this arrangement of elements is similar to the above period of modern periodic table?

- 
- iv. Which of the above elements have the biggest and the smallest atom?
  - v. What is the periodic trend observed in the variation of atomic radius while going from left to right within a period?
2. The observation made by Swarali while doing the experiment are given below. Based on these write answers to the questions:
- Swarali found that the light ray travelling from the denser medium to rarer medium goes away from the normal. If the angle of incidence ( $i$ ) is raised by Swarali, the angle of refraction ( $r$ ) went on increasing. However after certain value of the angle of incidence the light ray is seen to return back into the denser medium.
- Questions:
- i. What is the specific value of Li called?
  - ii. What is the process of reflection of incident ray into denser medium called?
  - iii. Draw the diagrams of three observations made by Swarali.

# **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)

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

**Q.1. (A) Solve the following questions:**

[5]

- i. Fill in the blank and rewrite the sentence:

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

- ii. Match the pairs:

	<b>Group ‘A’</b>		<b>Group ‘B’</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:  $\text{BeO}$  :: Molecular formula of beryllium chloride ::

<sup>1</sup>With all the following quotations see 61.

(1)

- iv. Write whether the following statement is true or false.

(B) Choose the correct alternative and rewrite the statement:

[5]

- (B) Choose the correct alternative and rewrite the following statements.**

i) Combustion of coal in air is a **reversible** reaction.



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



- iii. The crystals of ferrous sulphate are

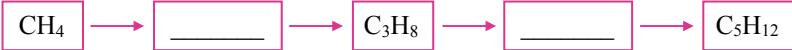


- iv. A laser beam enters from air to soap solution in water then

- (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

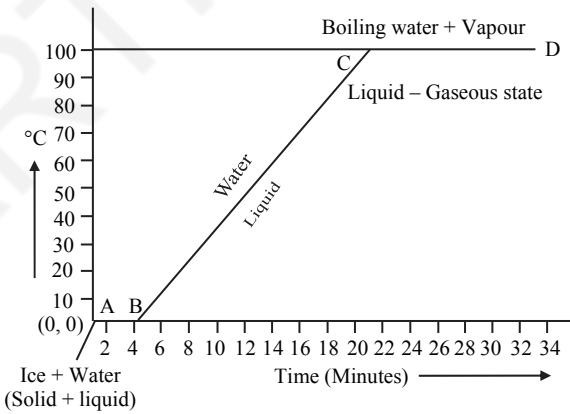
- v. When temperature of water is reduced below \_\_\_\_\_ °C, it expands.

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

- i. 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?
- ii. Explain why value of  $g$  changes if we go inside the earth.
- iii. Complete the following flowchart and write the general formula of alkane:  

- iv. What is a geostationary satellite? Why are geostationary satellites not useful for studies of polar region?
- v. If the speed of light in a medium is  $1.5 \times 10^8$  m/s, what is the absolute refractive index of the medium? (Velocity of light in vacuum  $3 \times 10^8$  m/s)
- vi. 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.
- vii. 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]**

- i. 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? ( $g = 10 \text{ m/s}^2$ )
- ii. Explain the similarity and difference in two events namely adding NaOH to water and adding CaO to water.
- iii. Observe the following reaction carefully and answer the sub-questions:  
 $\text{NH}_3 + \text{HCl} \longrightarrow \text{NH}_4\text{Cl}$ 
  - a. What are the salt and acid in the above reaction?
  - b. Which is the base in the above reaction? It is weak or strong?
  - c. Write a reaction showing dissociation of this base in water.
- iv. Explain the following temperature Vs. time graph:



- v. 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?
- vi. Give scientific reason:  
Anodes need to be replaced from time to time during the electrolysis of alumina.
- vii. What is meant by Vinegar and Gashol? What are their uses?

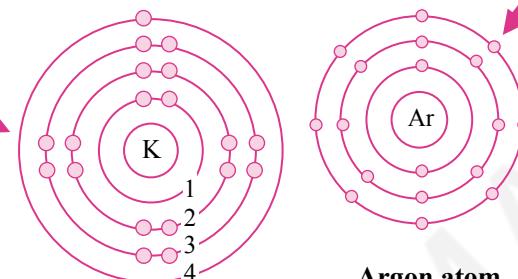
**Q.4. Solve the following questions (any one):**

[5]

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

1	2	13	14	15	16	17	18
H 1							He 2
Li 2, 1	Be 2, 2	B 2, 3	C 2, 4	N 2, 5	O 2, 6	F 2, 7	Ne 2, 8
Na 2, 8, 1	Mg 2, 8, 2	Al 2, 8, 3	Si 2, 8, 4	P 2, 8, 5	S 2, 8, 6	Cl 2, 8, 7	Ar 2, 8, 8
K 2, 8, 8, 1	Ca 2, 8, 8, 2						
Sr							
Ba							
Ra							

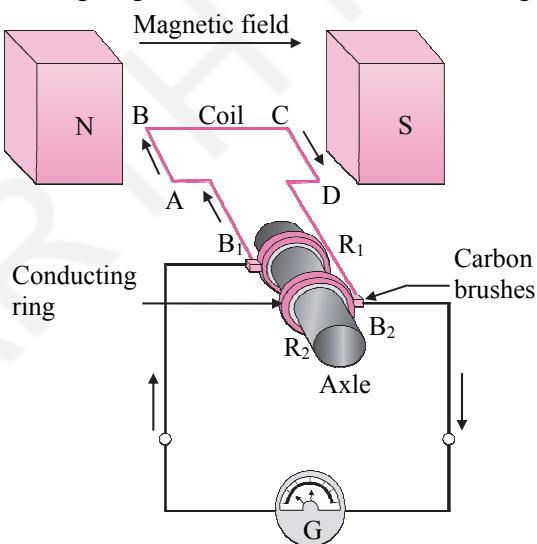
Potassium atom



Argon atom

- a. Write the atomic numbers of first two elements in the second group.  
 b. Write the number of valence electrons of the elements in the halogen group.  
 c. Draw the diagram of electronic configuration of magnesium atom.  
 d. After completion of a period, what change does take place in the electronic configuration of the next element?  
 e. 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:



- a. Which instrument the above figure shows?  
 b. Which rule is used to determine the direction of the current produced?  
 c. State the rule.  
 d. 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?  
 e. What change will have to be made in the coil for increasing the current several times without changing the magnet?

# **BOARD QUESTION PAPER: MARCH 2020**

## **Science and Technology Part - 1**

## Time: 2 Hours

Total Marks: 40

**Note:**

- i. All questions are compulsory.
- ii. Use of a calculator is not allowed.
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- iv. In case of MCQs (Q. No. 1(A)) only the first attempt will be evaluated and will be given credit.
- v. For each MCQ, the correct alternative (A), (B), (C), (D) with sub-question number is to be written as an answer.  
For Eg: (i) (A), (ii) (B), (iii) (C)
- vi. Scientifically correct, labelled diagrams should be drawn wherever necessary.



- (B) Answer the following:** [5]

  - Find the odd one out:  
Voltmeter, Ammeter, Thermometer, Galvanometer.
  - Complete the correlation:  
Alkene : C = C :: Alkyne: \_\_\_\_\_.
  - State true or false:  
The frequency of AC is 50 Hz.
  - Match the Columns:

<b>Column 'A'</b>	<b>Column 'B'</b>	
The wavelength of red light	(a)	600 nm
	(b)	700 nm
	(c)	500 nm

- v. Name the first artificial satellite sent by Russia in space.

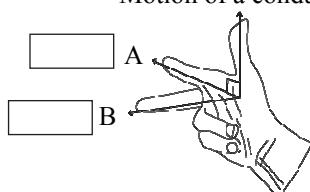
- Q.2. (A) Give scientific reasons (any two):** [4]

  - i. The weight of an object changes from place to place though its mass is constant.
  - ii. Stars twinkle but we do not see the twinkling of planets.
  - iii. Elements belonging to the same group have similar properties.

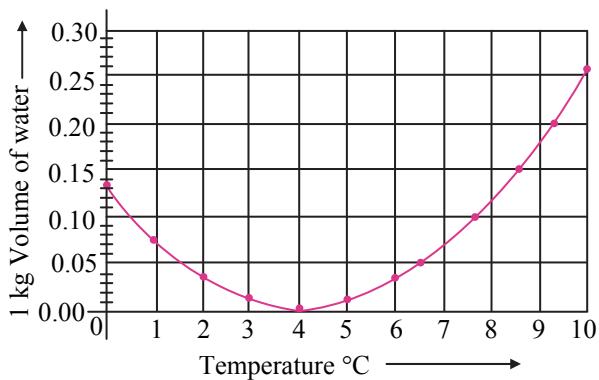
- (B) Answer the following (any three):** [6]

  - How much heat energy is necessary to raise the temperature of 5 kg of water from 20°C to 100°C?
  - Observe the given figure of Fleming's Right Hand Rule and write the labels of A and B correctly.

### Motion of a conductor



- iii. Observe the given graph and answer the following questions:

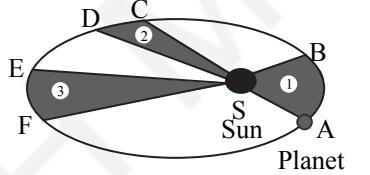


- a. Name the process represented in the figure.
  - b. At what temperature does this process take place?
- iv. Complete the given chemical reaction:
- $$\text{CuSO}_4 \text{ (aq)} + \text{Fe (s)} \rightarrow \text{_____} + \text{_____}.$$
- Name the type of the reaction.
- v. Write a short note on Alloying.

**Q.3. Answer the following (any five):**

[15]

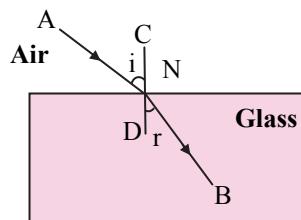
- i. An element has its electronic configuration as 2, 8, 2. Now answer the following questions:
  - a. What is the atomic number of this element?
  - b. What is the group of this element?
  - c. To which period does this element belong?
- ii. Observe the given figure showing the orbit of a planet moving around the Sun and write the *three laws related to it*:



**The orbit of a planet moving around the Sun**

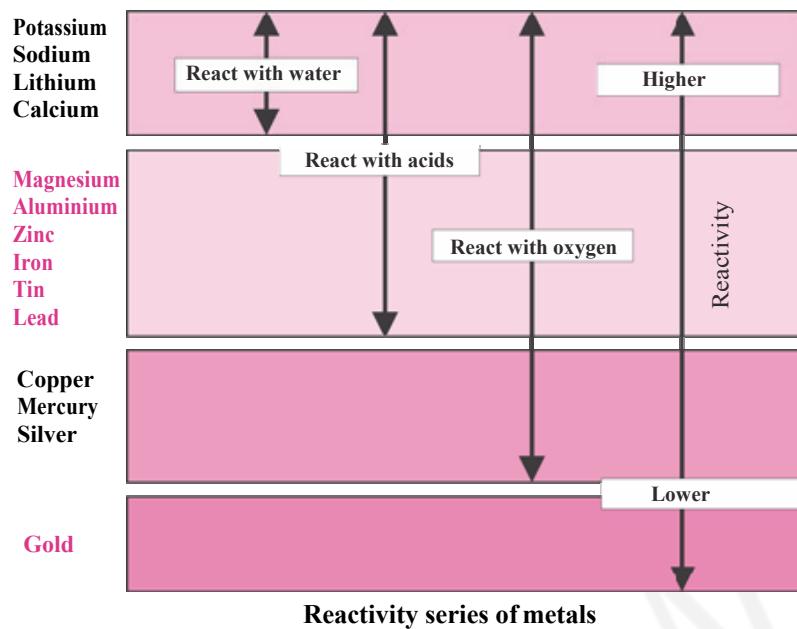
- iii. Read the given passage and answer the following questions:  
The home electrical connection consists of 'live', 'neutral' and 'earth' wires. The 'live' and the 'neutral' wires have potential difference of 220 V. The 'earth' is connected to ground. Due to a fault in the equipment or if the plastic coating on the 'live' and the 'neutral' wires gives a way the two wires come in contact with each other and a large current flows through it producing heat. If any inflammable material (such as wood, cloth, plastic, etc.) exists around that place it can catch fire. Therefore a fuse wire is used as a precautionary measure.
  - a. Name the two wires having potential difference of 220 V.
  - b. What is short circuit?
  - c. Write the function of a fuse.

- iv. Observe the given figure and answer the following questions:
- a. Name the process represented by the figure.
  - b. State the two laws related to the process.



- v. What is an artificial satellite? Name any two types of artificial satellite and state their functions.
- vi. Answer the following questions:
  - a. Define Hydrocarbons.
  - b. Name the types of Hydrocarbons.
  - c. Name two carbon compounds used in day-to-day life.

vii. Observe the given figure of reactivity series of metals and answer the following questions:



- Name two metals which react with water.
- Name two moderately reactive metals.
- Name the most highly reactive metal and the most less reactive metal.

viii. Complete the following table:

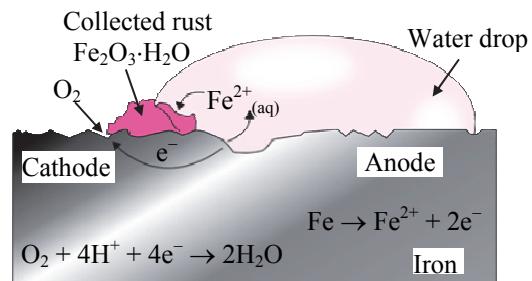
Straight chain of Carbon compounds	Structural formula	Molecular formula	Name
C	<pre>       H               H - C - H               H     </pre>	CH <sub>4</sub>	Methane
C–C	_____	_____	Ethane
C–C–C	_____	C <sub>3</sub> H <sub>8</sub>	_____
C–C–C–C	<pre>       H   H   H   H                           H - C - C - C - C - H                           H   H   H   H     </pre>	_____	_____

#### Q.4. Answer any one of the following:

[5]

- Draw a scientifically correct labelled diagram of a human eye and answer the questions based on it:
  - Name the type of lens in the human eye.
  - Name the screen at which the maximum amount of incident light is refracted?
  - State the nature of the image formed of the object on the screen inside the eye.

- Observe the following picture and answer the following questions:
  - What is a rust?
  - Write the chemical formula of rust.
  - Write the reaction of oxidation of iron at anode.
  - Write the reaction of oxidation of iron at cathode.
  - What is corrosion?



# BOARD QUESTION PAPER: JULY 2020

## Science and Technology Part - 1

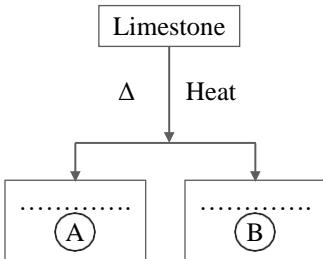
Time: 2 Hours

Total Marks: 40

- Note:**
- i. All questions are compulsory.
  - ii. Use of a calculator is not allowed.
  - iii. The numbers to the right of the questions indicate full marks.
  - iv. In case of MCQs (Q. No. 1(A)) only the first attempt will be evaluated and will be given credit.
  - v. For each MCQ, the correct alternative (A), (B), (C) or (D) with sub-question number is to be written as an answer.  
For Eg: (i) (A), (ii) (B), (iii) (C)
  - vi. Scientifically correct, labelled diagrams should be drawn wherever necessary.

- Q.1. (A) Choose the correct option:** [5]
- i. The minimum velocity of the spacecraft to escape from earth's gravitational force must be \_\_\_\_\_.  
(A) 112 km/s    (B) 11.2 km/s    (C) 1.12 km/s    (D) 0.112 km/s
  - ii. The melting point of pure ethanoic acid is \_\_\_\_\_.  
(A) 17°C    (B) 19°C    (C) 15°C    (D) 27°C
  - iii. The process of separation of light into its component colour while it is passing through a medium is called \_\_\_\_\_.  
(A) Reflection    (B) Refraction  
(C) Dispersion    (D) Internal reflection
  - iv. The conversion of ferrous sulphate into ferric sulphate is \_\_\_\_\_ reaction.  
(A) Oxidation    (B) Displacement  
(C) Electrolysis    (D) Reduction
  - v. Lithium (Li), \_\_\_\_\_ and Potassium (K) is Dobereiner's triad.  
(A) Magnesium (Mg)    (B) Aluminium (Al)  
(C) Sodium (Na)    (D) Calcium (Ca)
- (B) Solve the following sub-questions:** [5]
- i. State true or false:  
The refractive index depends upon the velocity of light in medium.
  - ii. Write the correlated answer:  
Torch : Concave lens :: Camera : \_\_\_\_\_.
  - iii. Find odd man out:  
Zinc, Iron, Phosphorus, Sodium.
  - iv. Draw the structural formula of C<sub>3</sub>H<sub>8</sub>.
  - v. Which satellite is used in educational field among INSAT and GSAT series?
- Q.2. (A) Give scientific reasons (any two):** [4]
- i. Star appears to be twinkling at night.
  - ii. Simple microscope is used for watch repairs.
  - iii. The copper vessels turn greenish and silver articles turn blackish when kept open in air for long time.
- (B) Answer the following questions (any three):** [6]
- i. An object takes 5 seconds to reach the ground from a height of 5 m on a planet. What is the value of 'g' on that planet?

- ii. Identify 'A' and 'B' from the following table and complete the table. Write the chemical equation:



- iii. Write the modern periodic law and also give the names of 'blocks' in modern periodic table.
- iv. Distinguish between 'alternating current' and 'direct current'.
- v. Define specific heat capacity. Write its S.I. unit.

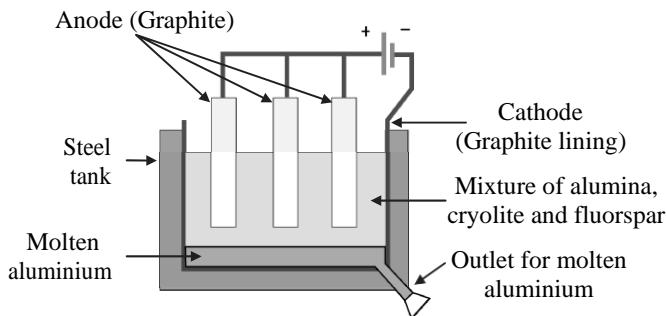
**Q.3. Answer the following (any five):**

[15]

- i. An iron ball of mass 3 kg is released from a height of 125 m and falls freely to the ground. Assuming that the value of 'g' is  $10 \text{ m/s}^2$ , calculate:
- Time taken by the ball to reach the ground.
  - Velocity of the ball on reaching the ground.
- ii. An element has its electron configuration as (2, 8, 2). Answer the following:
- What is the 'atomic number' of this element?
  - What is the 'Group' of this element?
  - To which period does this element belong?
- iii. a. Write the 'endothermic' or 'exothermic' nature of the reaction:
- $$2\text{KClO}_{3(s)} \xrightarrow{\Delta} 2\text{KCl}_{(s)} + 3\text{O}_2 \uparrow$$
- b. Balance the given chemical equation:
- $$\text{NaOH}_{(\text{aq})} + \text{H}_2\text{SO}_{4(\text{aq})} \rightarrow \text{Na}_2\text{SO}_{4(\text{aq})} + \text{H}_2\text{O}_{(\text{l})}$$
- c. From given reaction, identify 'oxidant' and 'reductant':
- $$\text{CuO} + \text{H}_2 \rightarrow \text{Cu} + \text{H}_2\text{O}$$
- iv. A copper sphere of 100 g mass is heated to raise its temperature to  $100^\circ\text{C}$  and is released in water of mass 195 g and temperature  $20^\circ\text{C}$  in a copper calorimeter. If the mass of the calorimeter is 50 g, what will be the maximum temperature of water?  
(Specific heat of copper =  $0.1 \text{ cal/g}^\circ\text{C}$ )
- v. a. Draw a neat labelled diagram of 'dispersion of white light through glass prism'.
- b. Which coloured ray is the least deviated?
- c. Which coloured ray is the most deviated?
- vi. Complete the following table for convex lens:

	<b>Position of object</b>	<b>Position of image</b>	<b>Size of image</b>	<b>Nature of image</b>
(a)	_____	At focus $F_2$	Point image	Real and inverted
(b)	At $2F_1$	At $2F_2$	_____	Real and inverted
(c)	Between $F_1$ and O (within focal length)	On the same side (object side)	Very large	_____

vii. Observe the following diagram and answer the questions:

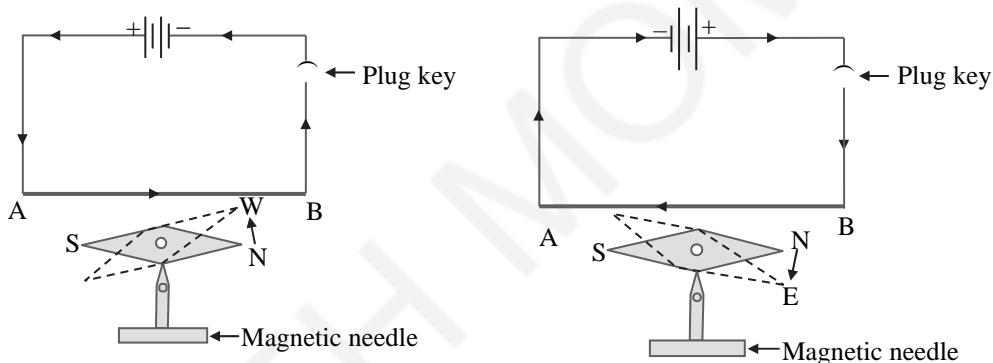


- Write the 'anode reaction'.
  - Write the 'cathode reaction'.
  - What is the purpose of mixing 'cryolite' and 'fluorspar' with 'alumina' in the electrolytic reduction of alumina?
- viii. a. What is the principle behind the working of satellite launch vehicle?  
b. Write the formula for the escape velocity.  
c. Write the long form of 'ISRO'.

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

[5]

- i. Observe the diagrams and answer the questions:



- Which effect of electric current is shown in the above figure?
  - What will happen if the number of electric cells is increased on the magnetic needle?
  - If the distance between the conductor and magnetic needle is increased, what will be the effect on intensity of magnetic field?
  - If the ends of electric cell are interchanged, what will be the effect of the magnetic needle?
  - Write the names of any *two* instruments which work on magnetic effect of electric current.
- ii. Answer the following:
- Draw the electron-dot structure of Methane.
  - Define Homologous series.
  - Write the IUPAC names of the following:
    - $\text{CH}_3 - \text{CH}_2 - \text{COOH}$
    - $\text{CH}_3 - \text{CHOH} - \text{CH}_3$
    - $\text{CH}_3 - \text{CO} - \text{CH}_2 - \text{CH}_3$

# N 197

Seat No.

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2021 IX 30 1030 -N 197 – SCIENCE AND TECHNOLOGY (72) - PART I (E)

(REVISED COURSE)

Time: 2 Hours

(Pages 11)

Max. Marks: 40

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**Note:** i. All questions are compulsory.

ii. Use of calculators is not allowed.

iii. Figures to the right indicate full marks.

iv. Start writing each main question on new page.

v. For each MCQ (i.e. Q. No. 1(A)) evaluation would be done for first attempt only.

v. For each MCQ correct answer must be written along with its alphabet.

Eg.: (i) (A)....., (ii) (B) ....., (iii) (C) .....

vi. Draw scientifically correct labelled diagrams wherever necessary.

**1. (A) Write the correct alternative: 5**

(i) If I is the current flowing continuously through the circuit, the heat produced in the resistor R in time t will be .....

(A)  $IRT$

(B)  $IR^2T$

(C)  $I^2RT$

(D)  $IRT^2$

(ii) ..... element belongs to group 18.

(A) Na

(B) Cl

(C) Fe

(D) Ne

# 3/N 197

(iii) \_\_\_\_\_ is a satellite vehicle.

(A) PSLV

(B) GSAT

(C) IRNSS

(D) INSAT

(iv) The phenomenon in which the ice converts to liquid due to applied pressure and then re-converts to ice once the pressure is removed  
is called \_\_\_\_\_

(A) Boiling point

(B) regelation

(C) freezing

(D) melting point

4/N 197

(v) As we rise from the surface of the earth, the value of  $g$  \_\_\_\_\_

- (A) increases
  - (B) becomes zero
  - (C) does not change
  - (D) decreases

**(B) Answer the following :**

5

(i) Complete the correlation :

Object is at unlimited distance : Point is at focus F1 ::

Object is between F1 and 2F1 :

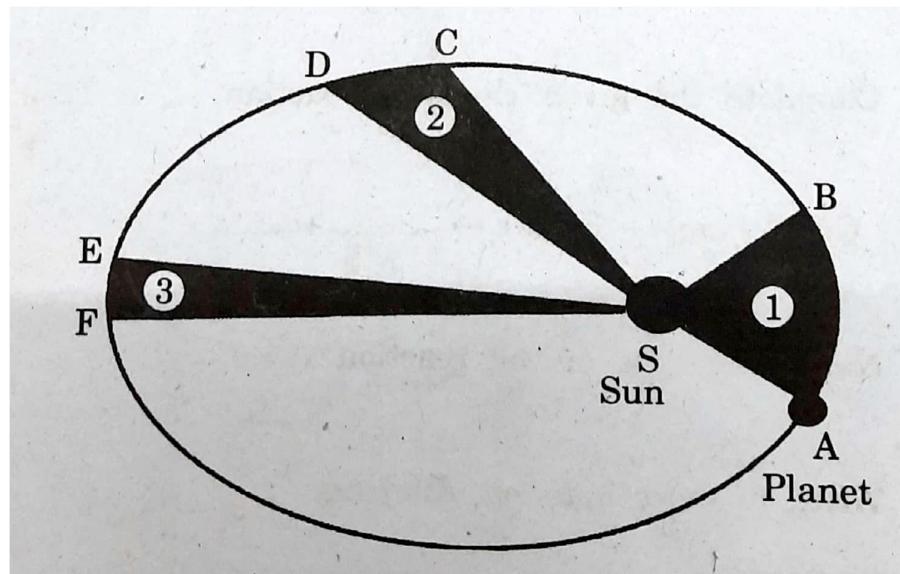
(ii) State True or False:

In chemical equation we write the reactants on the right and the product

on the left.

# 5/N 197

(iii) Write the name of the law shown in the following diagram:



(iv) Match the columns:

**Column 'A'**

Anomalous behaviour of water

**Column 'B'**

(a)  $0^{\circ}\text{C}$  to  $-10^{\circ}\text{C}$

(b)  $0^{\circ}\text{C}$  to  $4^{\circ}\text{C}$

(c)  $0^{\circ}\text{C}$  to  $10^{\circ}\text{C}$

(v) What is meant by space debris?

# 6/N 197

2. (A) Give scientific reasons (any two) :

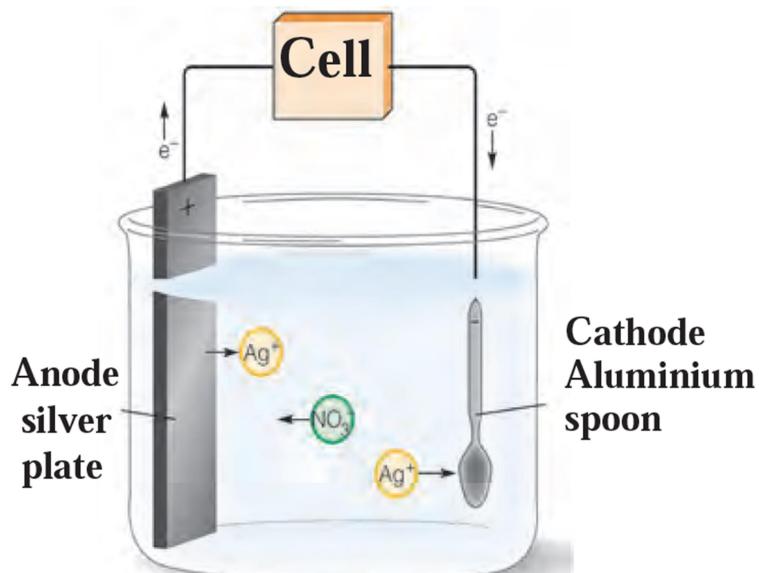
4

- (i) Elements belonging to the same group have the same valency.
- (ii) It is necessary to connect earth wires in home electric connection.
- (iii) Sodium metal is always kept in kerosene.

(B) Answer the following (any three) :

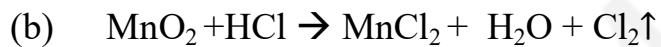
6

- (i) A tennis ball is thrown up and reaches a height of 5 m before coming down. What was its initial velocity? ( $g = 10 \text{ m/s}^2$ )
- ii. Identify the process described in the sketch below and write any two uses.



# 7/N 197

- iii. Explain the law of refraction.
- iv. Balance the following chemical equation  
(Do not write step by step)



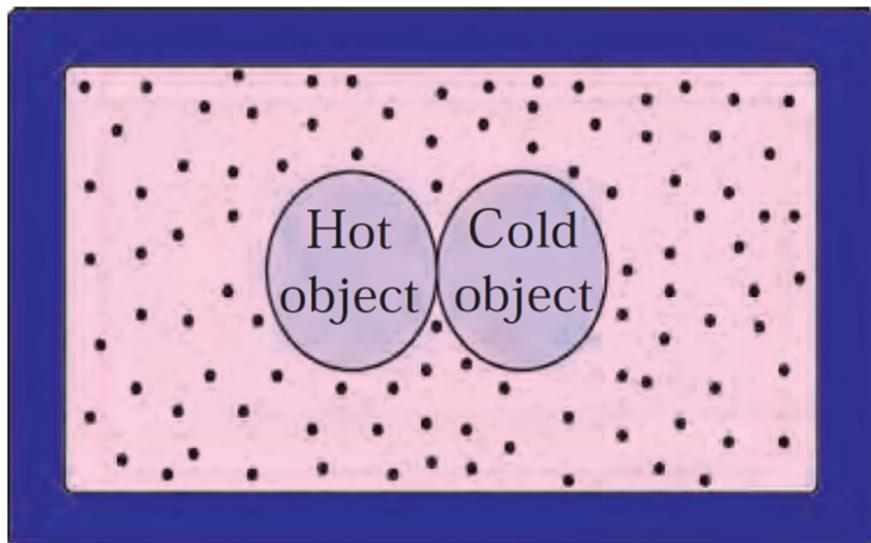
- v. Write a note on : ‘Persistence of vision’

**3. Answer the following (any five) :** **15**

- (i) (a) What is the chemical formula of rust?
- (b) Write the chemical reaction of electric current passing through positive and negative surface of iron.

# 8/N 197

(ii) Answer the following questions with the help of following diagram.



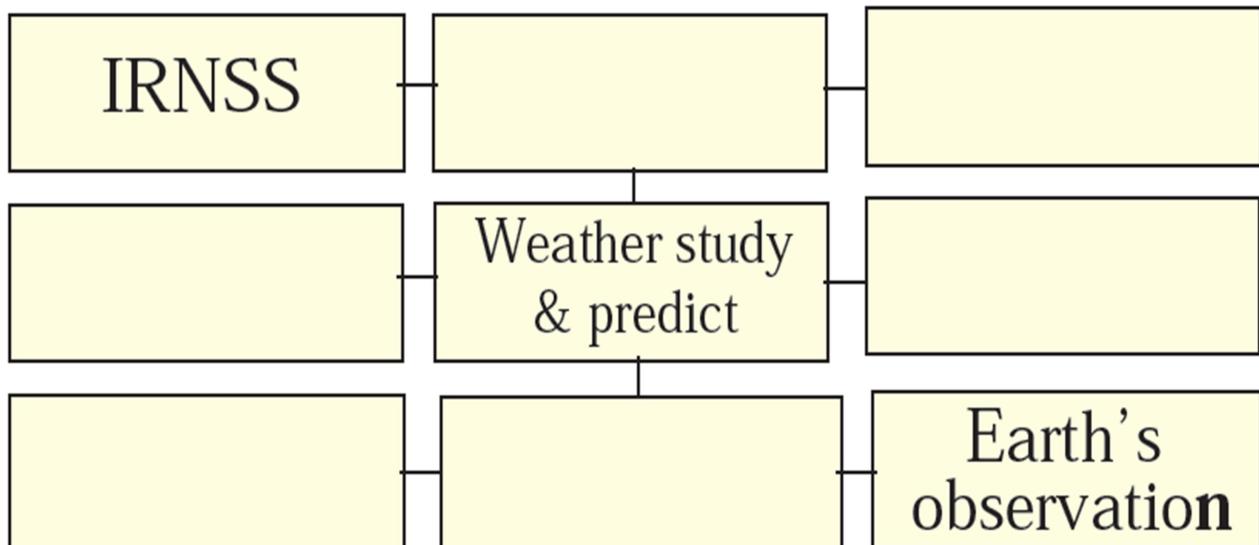
- (a) Heat is transferred from where to where?
- (b) Which principle do we learn about from this process?
- (c) Which property of the substance is measured using this principle?

# 9/N 197

(iii) The electronic configuration of metal 'A' is 2,8,1 and that of metal 'B' is 2,8,2.

- (a) Which of the two metals is more reactive?
- (b) Write the name of more reactive metal.
- (c) Write their reaction with dilute hydrochloric acid

(iv) Complete the following table:



# 10/N 197

- (v) Distinguish between myopia and hypermetropia. (Any 3 points)
- (vi) Saturated hydrocarbons are classified into three types. Write these names giving one example each.
- (vii) Who will spend more electrical energy? 500 W TV Set in 30 mins, or 600 W heater in 20 mins?
- (viii) Describe the demerits of Mendeleev's periodic table.

**4. Answer any one of the following: 5**

- i. With the help of a neat labelled diagram prove that a rainbow is the combined effect of the refraction, dispersion, and total internal reflection of light.

# **11/N 197**

- ii. Answer the following questions.
- a) Draw neat labelled diagram of ‘Esterification Reaction’
  - b) Write the molecular formula of ester.
  - c) Describe the characteristics of ester.
  - d) Write any two uses of ester.

# **BOARD QUESTION PAPER: MARCH 2022**

## **Science and Technology Part - 1**

## **Time: 2 Hours**

**Max Marks: 40**

**Note:**

- i. All questions are compulsory.
- ii. Use of a calculator is not allowed.
- iii. The numbers to the right of the questions indicate full marks.
- iv. In case of MCQs (Q. No. 1(A)) only the first attempt will be evaluated and will be given credit.
- v. For each MCQ, the correct alternative (A), (B), (C) or (D) with subquestion number is to be written as an answer.  
For Eg: (i) (A), (ii) (B), (iii) (C)
- vi. Scientifically correct, labelled diagrams should be drawn wherever necessary.

**Q.1. (A) Choose the *correct* Alternative:**

[5]



**(B) Answer the following:**

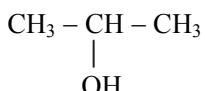
[5]

- i. Find the odd one out:  
INSAT, GSAT, IRS, PSLV
  - ii. Complete the correlation:  
Group 1 : Alkali metals :: \_\_\_\_\_ : Halogens.
  - iii. Match the correct pair:

<b>Column 'A'</b>	<b>Column 'B'</b>
Refractive index of water	(a) 1.31
	(b) 1.36
	(c) 1.33

- iv. State True or False:  
An electric motor converts mechanical energy into electrical energy.

v. Write the IUPAC name for the following structural formula:



**Q.2. (A) Give scientific reasons (any two):**

[4]

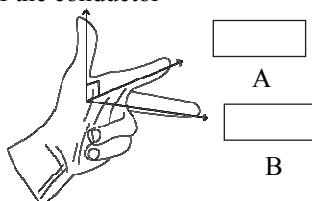
- Atomic radius goes an increasing down a group.
- Simple microscope is used for watch repairs.
- It is recommended to use airtight container for storing oil for long time.

**(B) Answer the following questions (any three):**

[6]

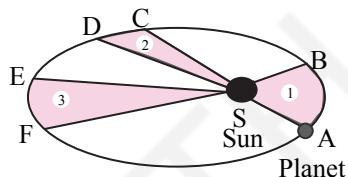
- An object takes 5 s to reach the ground from a height of 5 m on a planet. What is the value of 'g' on the planet?
- Draw a neat labelled diagram of Hope's Apparatus.
- State the Laws of Refraction.
- Answer the following:
  - Name the main ore of aluminium.
  - What impurities are present in aluminium ore?
- Observe the given figure of Fleming's Left Hand Rule and write the labels of 'A' and 'B':

Force of the conductor

**Q.3. Answer the following (any five):**

[15]

- Write the demerits of Mendeleev's periodic table.
- State the laws related to the given diagram:



- Identify the type of chemical reaction given below:
  - $\text{CuSO}_4 + \text{Fe} \longrightarrow \text{FeSO}_4 + \text{Cu}$
  - $2\text{Mg} + \text{O}_2 \longrightarrow 2\text{MgO}$
  - $2\text{KClO}_3 \longrightarrow 2\text{KCl} + 3\text{O}_2 \uparrow$
- If the speed of light in a medium is  $1.5 \times 10^8$  m/s, what is the absolute refractive index of the medium? (Speed of light in vacuum =  $3 \times 10^8$  m/s).
- Read the following paragraph and answer the questions based on it:

If heat is exchanged between a hot and cold object, the temperature of the cold object goes on increasing due to gain of energy and the temperature of the hot object goes on decreasing due to loss of energy.

The change in temperature continues till the temperatures of both the objects attain the same value. In this process, the cold object gains heat energy and the hot object loses heat energy. If the system of both the objects is isolated from the environment by keeping it inside a heat resistant box, then no energy can flow from inside the box or come into the box.

- Heat is transferred from where to where?
- Which principle do we learn about from this process?
- How will you state the principle briefly?

vi. Complete the following table for convex lens:

Sr. No.	Position of the object	Position of the image	Nature of the image
1.	Beyond $2F_1$	_____	_____
2.	_____	At infinity	_____
3.	_____	_____	Real, inverted and enlarged

vii. Explain the following terms:

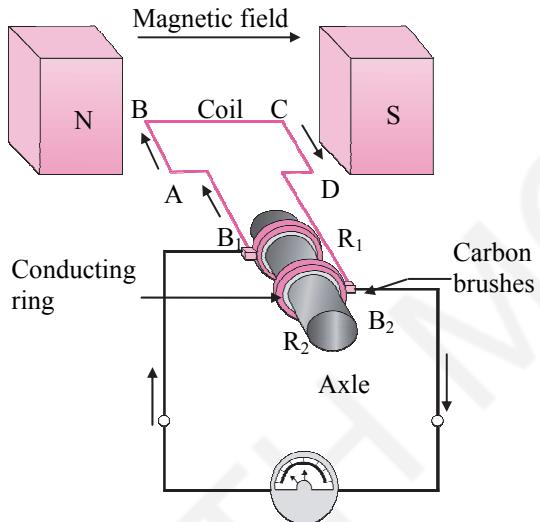
- (a) Metallurgy
- (b) Ores
- (c) Gangue.

viii. State the importance of Space Mission.

**Q.4. Answer any one of the following questions:**

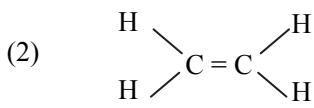
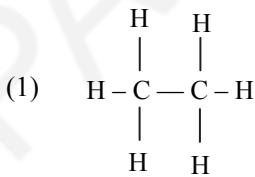
[5]

i. Observe the following diagram and answer the questions given below:



- a. Identify the above diagram. 1
- b. Write the principle on which the above appliance works. 1
- c. Write the working of the above appliance. 2
- d. Write the use of the above appliance. 1

ii. a. Identify saturated and unsaturated hydrocarbon from the given structural formula: 2



- b. Draw electron dot structure for (1) and (2). 2
- c. Define Homologous series. 1

# **BOARD ACTIVITY SHEET: MARCH 2023**

## **Science and Technology Part - 1**

## **Time: 2 Hours**

**Max. Marks: 40**

**Note:**

- i. All questions are compulsory.
- ii. Use of a calculator is not allowed.
- iii. The numbers to the right of the questions indicate full marks.
- iv. In case of MCQs (Q. No. 1(A)) only the first attempt will be evaluated and will be given credit.
- v. For every MCQ, the correct alternative (A), (B), (C) or (D) with subquestion number is to be written as an answer.  
For Eg.: (i) (A), (ii) (B), (iii) (C)
- vi. Scientifically correct, labelled diagrams should be drawn wherever necessary.

**Q.1. (A) Choose the correct alternative:** [5]



**(B) Answer the following questions:** [5]

- i. Find the odd man out:  
Loudspeaker, Microphone, Electric motor, Magnet.
  - ii. Complete the co-relation:  
 $\text{CuI}_2$  : Brown : :  $\text{AgCl}$  : \_\_\_\_\_
  - iii. Match the pair:

<b>Group 'A' Substance</b>	<b>Group 'B' Refractive index</b>
Air	(a) 1.33
	(b) 1.46
	(c) 1.0003

- iv. State True or False:  
“Wavelength of red light is close to 700 nm.”

v. Write the name of small satellite made by a group of students from COEP (College of Engineering, Pune) sent to the space through ISRO in 2016.

**Q.2. (A) Give scientific reasons (any two): [4]**

- i. For electric power transmission, copper or aluminium wire is used.
  - ii. Lemon or tamarind is used for cleaning copper vessels turned greenish.
  - iii. Elements belonging to the same group have the same valency.

**(B) Answer the following questions (any three):**

[6]

- i. How do we feel about air in each of the following conditions?
  - (a) Relative humidity is more than 60%.
  - (b) Relative humidity is less than 60%.
- ii. Complete the following reaction:  
 $C_{12}H_{22}O_{11} \xrightarrow{\text{heat}} \underline{\hspace{2cm}} + \underline{\hspace{2cm}}$
- iii. Distinguish between Mass and Weight.
- iv. Complete the following table:

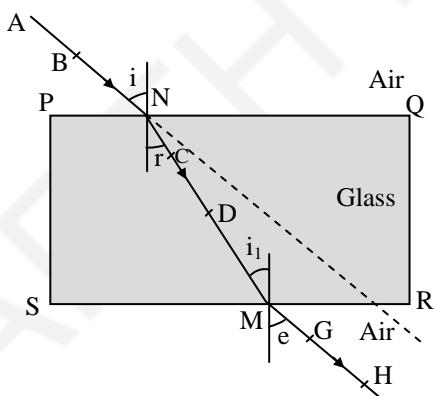
Type of Satellite		The names of Indian Satellite and launcher
1.	Navigational Satellite	Satellite : _____
	Satellite	Launcher : _____
2.	Earth observation	Satellite : _____
	Satellite	Launcher : _____

- v. Define periods and groups of modern periodic table.

**Q.3. Answer the following questions (any five):**

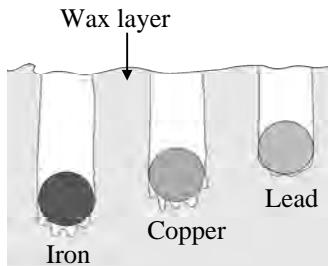
[15]

- i. Calculate the escape velocity on the surface of the moon given the mass and radius of the moon to be  $7.34 \times 10^{22}$  kg and  $1.74 \times 10^6$  m respectively. (Given:  $G = 6.67 \times 10^{-11}$  Nm $^2$ /kg $^2$ ).
- ii. An element has its electron configuration as 2, 8, 1. Now answer the following questions:
  - (a) What is the atomic number of this element?
  - (b) What is the group of this element?
  - (c) To which period does the element belong?
- iii. Observe the figure and name the ray AB, ray CD, ray GH:



- iv. Read the following sentence and answer the questions:  
“NaCl is an ionic compound.”
  - (a) Why is NaCl an ionic compound?
  - (b) State any two properties of ionic compounds.
- v. Identify the physical and chemical changes from the following phenomena:
  - (a) Transformation of ice into water.
  - (b) Ripening of fruit.
  - (c) Milk turned into curd.
  - (d) Evaporation of water.
  - (e) Digestion of food in the stomach.
  - (f) Iron fillings get attracted towards the magnet.

vi. Observe the following figure and answer the questions:



#### Specific heat capacity of metals

- (a) Which element has maximum specific heat capacity? Justify.
- (b) Which element has minimum specific heat capacity? Justify.
- (c) Define specific heat of object.

vii. Identify figures A, B, C and given their uses:

(A)



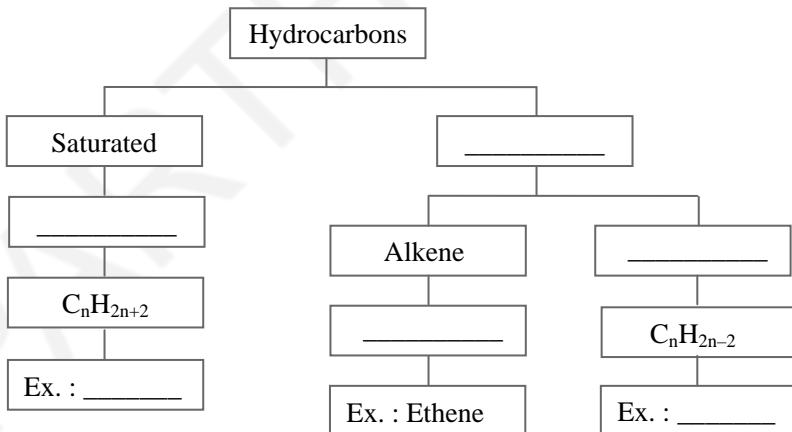
(B)



(C)



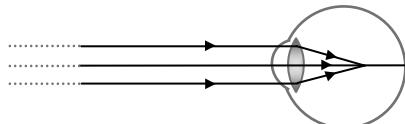
viii. Complete the following flow chart:



#### Q.4. Answer any one of the following questions:

[5]

i. Observe the figure and answer the following questions:



- (a) Name the defect of vision represented in above figure.
- (b) State the reasons for this defect.
- (c) How is it corrected?
- (d) Draw the diagram to show the correction of this defect.

ii. Complete the following table:

S.N.	Common Name	Structural Formula	IUPAC Name
1.	Ethylene	$\text{CH}_2 = \text{CH}_2$	_____
2.	Acetylene	_____	Ethyne
3.	Acetic acid	$\text{CH}_3 - \text{COOH}$	_____
4.	Methyl alcohol	_____	Methanol
5.	_____	$\text{CH}_3 - \text{CO} - \text{CH}_3$	Propane-2-one



# **BOARD ACTIVITY SHEET: July 2023**

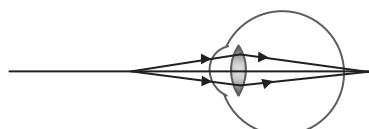
## **Science and Technology Part - 1**

## Time: 2 Hours

Max. Marks: 40

**Note:**

- i. All questions are compulsory.
- ii. Use of a calculator is not allowed.
- iii. The numbers to the right of the questions indicate full marks.
- iv. In case of MCQs (Q. No. 1(A)) only the first attempt will be evaluated and will be given credit.
- v. For each MCQ, the correct alternative (A), (B), (C) or (D) with subquestion number is to be written as an answer.  
For Eg.: (i) (A), (ii) (B), (iii) (C)
- vi. Scientifically correct, labelled diagrams should be drawn wherever necessary.



- v. Give the unit of intensity of magnetic field.

**Q.2. (A) Give scientific reasons (any two):**

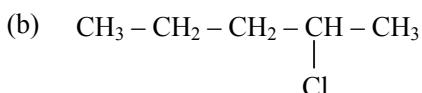
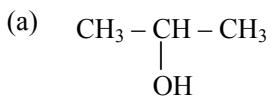
[4]

- Tungsten metal is used to make solenoid type coil in an electric bulb.
- Simple microscope is used for watch repairs.
- Metallic character goes on decreasing while going from left to right in a period.

**(B) Answer any three of the following questions:**

[6]

- Write the IUPAC names of the following structural formulae:



- An iron ball of mass 5 kg is released from a height of 125 m and falls freely to the ground. Assuming that the value of g is  $10 \text{ m/s}^2$ , calculate time taken by the ball to reach the ground.
- What is meant by artificial satellite? Name the first satellite launched by Russia.
- Draw the image formed by convex lens, if object is placed at  $2F_1$ .
- Why does the apparent position of stars keep changing a bit?

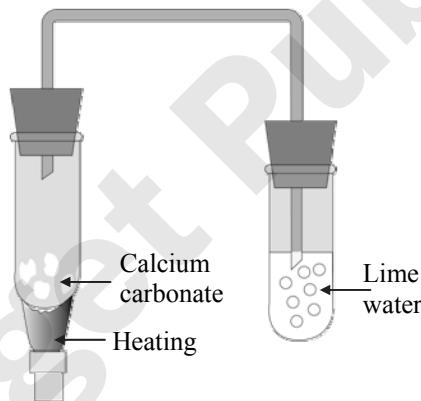
**Q.3. Answer any five of the following questions:**

[15]

- Identify the process given below and accordingly draw neat labelled diagram:

A molten mixture of alumina ( $\text{Al}_2\text{O}_3$ ) (melting point  $> 2000^\circ\text{C}$ ) is done in a steel tank. The tank has a graphite lining on the inner side. The lining does the work of cathode. A set of graphite rods dipped in the molten electrolyte works as anode. Cryolite ( $\text{Na}_3\text{AlF}_6$ ) and fluorspar ( $\text{CaF}_2$ ) are added in the mixture to lower its melting point upto  $1000^\circ\text{C}$ .

- With reference to the given diagram answer the following questions:



- Give type of chemical reaction.
- Give the names of reactants and products.
- Write down the balanced chemical equation.

- What is Electrical Power? Derive the unit of electric power from the given equations:

$$P = V \times \square$$

$$P = \square \times \text{ampere}$$

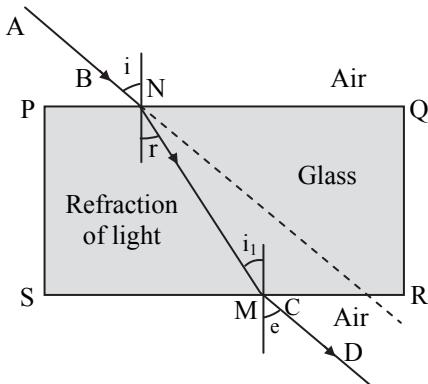
$$= 1 \text{ volt} \times 1 \square = \frac{1\text{J}}{1\text{C}} \times \frac{1\text{C}}{1\text{s}}$$

$$\therefore P = \frac{1\text{J}}{\square} = W (\text{Watt}).$$

- Explain the term anodization with example. Give one use of it.
- State Kepler's three laws of motion.



- vi. The electronic configuration of an element X is 2, 8, 8, 2.  
(a) What is the atomic number of the element X?  
(b) To which group does this element belong?  
(c) In which period does this element lie?
- vii. What is the contribution of India in space technology?
- viii. Observe the given diagram and answer the following questions:

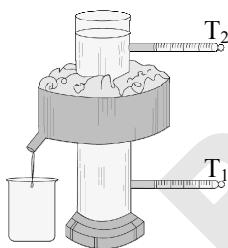


- (a) What is refraction of light?  
(b) Name the emergent ray.  
(c) Which two angles are equal?

**Q.4. Attempt any one of the following questions:**

[5]

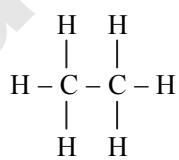
- i. Observe the given diagram and answer the following questions:



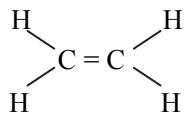
- (a) What is the name of the given apparatus?  
(b) Which phenomenon is studied with the help of this apparatus?  
(c) What are the final temperatures in thermometers T<sub>1</sub> and T<sub>2</sub>?  
(d) At what temperature the density of water is maximum?  
(e) Give one example of the above phenomenon in nature.

- ii. Observe and write the answers to the questions given below:

(I)



(II)



- (a) Write the names of compound I and II.  
(b) Draw electron-dot structure for I and II.  
(c) Which one of the above structures is saturated compound and unsaturated compound?



# **BOARD ACTIVITY SHEET: MARCH 2024**

## **Science and Technology Part - 1**

## Time: 2 Hours

Max. Marks: 40

**Note:**

- i. All questions are compulsory.
- ii. Use of a calculator is not allowed.
- iii. The numbers to the right of the questions indicate full marks.
- iv. In case of MCQs (Q. No. 1(A)) only the first attempt will be evaluated and will be given credit.
- v. Scientifically correct, labelled diagrams should be drawn wherever necessary.

**Q.1. (A) Write the correct alternative:**

[5]

- i. The SI unit of heat is \_\_\_\_\_.  
(A) calorie (B) joule  
(C) kcal/kg °C (D) cal/g °C

ii. We can see the sun even when it is little below the horizon because of \_\_\_\_\_.  
(A) Reflection of light (B) Refraction of light  
(C) Dispersion of light (D) Absorption of light

iii. \_\_\_\_\_ is the functional group of carboxylic acid.  
(A) —COOH— (B) —CO—  
(C) —CHO— (D) —OH—

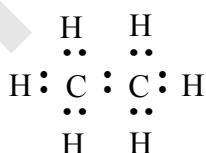
iv. In simple microscope \_\_\_\_\_ lens is used.  
(A) Concave (B) Plano concave  
(C) Plano convex (D) Convex

v. In \_\_\_\_\_ process a layer of molten tin is deposited on metals.  
(A) Anodization (B) Tinning  
(C) Galvanizing (D) Alloying

**(B) Answer the following:**

[5]

- i. Write the name of the atom having the smallest size.
  - ii. Write the molecular formula of calcium carbonate.
  - iii. Write the use of ‘Calorimeter’.
  - iv. Identify the hydrocarbon from the given electron-dot structure :



- v. Match the columns:

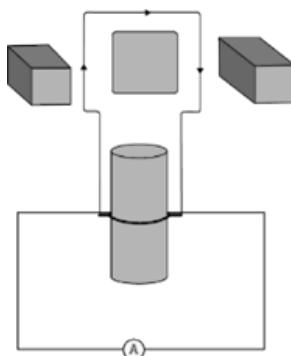
<b>Column 'A'</b>		<b>Column 'B'</b>
Refractive index of water	(a)	1.31
	(b)	1.36
	(c)	1.33

**Q.2. (A) Give scientific reasons (any two):**

- When the gas formed on heating limestone, is passed through freshly prepared lime water, the lime water turns milky.
- Tungsten metal is used to make a solenoid type coil in an electric bulb.
- On exposure to air, silver articles turn blackish after some time.

**(B) Answer the following (any three):**

- State Dobereiner's law of triad. Give *one* example of it.
- Identify the figure and explain its use:



- What is meant by satellite launch vehicle? Name any one Indian satellite launch vehicle.
- What is free fall? When is it possible?
- The focal length of a convex lens is 20 cm. What is its power?

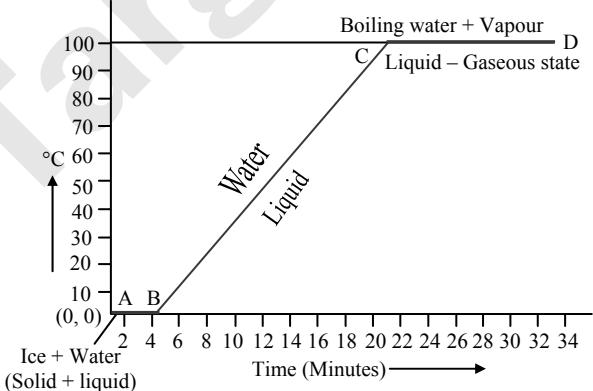
**Q.3. Answer the following questions (any five):**

- Select the appropriate option and complete the following paragraph :

(Metals, non-metals, metalloids, four, seven, s-block, p-block, d-block, f-block.)

On the basis of electronic configuration, elements in the modern periodic table are classified into \_\_\_\_\_ blocks. Group 1 and 2 elements are included in \_\_\_\_\_ and all these elements are metals. (except hydrogen). Group 13 to 18 elements are included in \_\_\_\_\_. This block contains metals, non-metals and metalloids. Group 3 to 12 elements are included in \_\_\_\_\_ and all the elements are \_\_\_\_\_ elements shown at the bottoms of the periodic table i.e., lanthanides and actinides constitute \_\_\_\_\_ and all these elements are metals.

- (a) What are the factors affecting the rate of chemical reaction?  
(b) Explain any *one* factor.
- Observe the following graph answer the following questions.



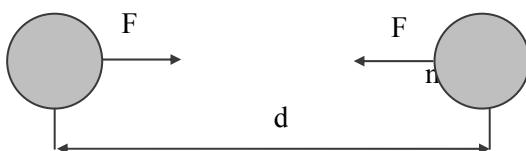
- What does the graph represent?
- What does the line AB represent?
- What does the line BC represent?

iv. Complete the following table by observing the given figures:

Points ↓	Figure →
(a) Name of the defect	_____
(b) Position of the image	_____
(c) Lens used to correct the defect.	_____

v. Write any *three* general properties of ionic compounds.

vi. Observe the figure and answer the questions:



- (a) State Newton's universal law of gravitation.
- (b) If the distance between the two bodies is tripled, how will the gravitational force between them change?
- (c) What will happen to gravitational force, if mass of one of the objects is doubled?

vii. The orbit of a satellite is exactly 35780 km above the Earth's surface and its tangential velocity is 3.08 km/s.

How much time the satellite will take to complete one revolution around the earth?

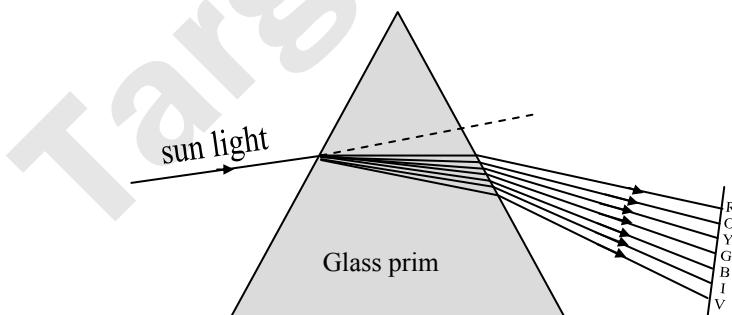
(Radius of the Earth = 6400 km.)

viii. What is a solenoid? Draw a neat diagram and name its various components.

**Q.4. Answer the following questions (any one):**

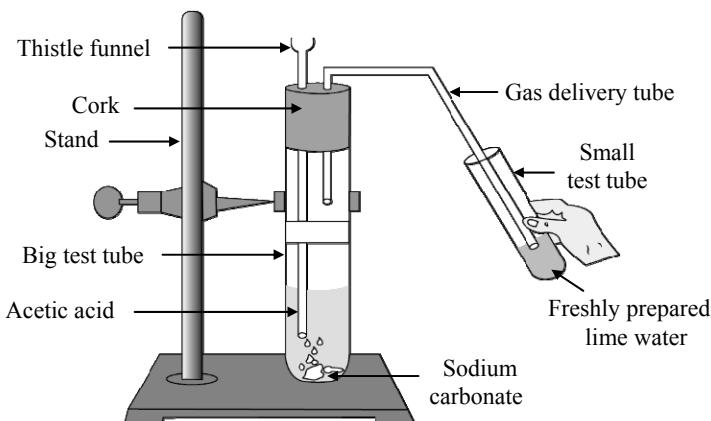
[5]

i. Observe the given diagram and answer the questions :



- (a) Name the process shown in the figure.
- (b) Name the colour that deviates the most.
- (c) Name the colour that deviates the least.
- (d) Name any *one* phenomenon in the nature which is based on the above process.
- (e) Define 'spectrum'.

ii. Observe the diagram given below and answer the questions :



- (a) Name the reactants in this reaction.
- (b) Which gas comes out as effervescence in the bigger test tube?
- (c) What is the colour change in the lime water?
- (d) In the above experiment instead of sodium carbonate which chemical can be used to get same product?
- (e) Write the use of acetic acid.

# N 405

Seat No.

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2024 VII 25 1100 – N 405 – SCIENCE AND TECHNOLOGY (72) – PART I (E)  
(REVISED COURSE)

Time : 2 Hours

(Pages 12)

Max. Marks : 40

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**Note :— (i) All questions are compulsory.**

**(ii) Use of the calculator is not allowed.**

**(iii) The numbers to the right of the questions indicate full marks.**

**(iv) In case of MCQs [Q. No. 1(A)] only the first attempt will be evaluated and will be given credit.**

**(v) For each MCQ the correct alternative (A), (B), (C), (D) with subquestion number is to be written as an answer.**

**For Eg. (i) (A) (ii) (B) (iii) (C)**

**(vi) Scientifically and technically correct labelled diagrams should be drawn wherever necessary.**

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5

1. (A) Choose the correct alternative :

(i) In modern periodic table the non-metals are found

2

in .....

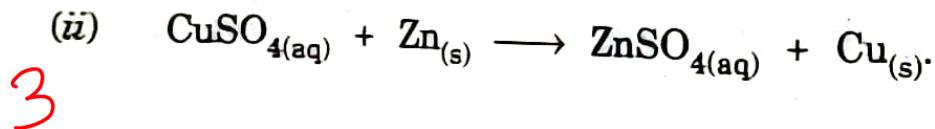
Consider correct  
answer

(A) s-block

(B) p-block

(C) d-block

(D) f-block



This is ..... type of chemical reaction.

(A) displacement

(B) double displacement

(C) combination

(D) decomposition

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(iii) The unit of electric power is .....

4

(A) Joule

(B) Volt

(C) Watt

(D) Coulomb

(iv) We can see the sun even when it is little below the horizon

6

because of .....

(A) reflection of light

(B) refraction of light

(C) dispersion of light

(D) absorption of light

(v) ..... is one of the combustible component of

9

L.P.G.

(A) Ethane

(B) Propane

(C) Methane

(D) Ethene

## (B) Answer the following questions :

(i) Write the correlation :

8

Brass : Copper and Zinc :: Bronze : Copper and tin

(ii) Write True or False :

9

Benzene is an aromatic compound.

True

(iii) Find the odd one out :

7

Myopia; Presbyopia; Hypermetropia; Retina

6

(iv) What is angle of refraction when angle of incidence is  $0^\circ$  ?

4

Name two appliances which work on the principle of magnetic effect of electric current.  
Electric motor, electric fan

(any 2 appliances)

2. (A) Give scientific reasons (any two) :

8

(i) Sodium is always kept in kerosene.

4

7

(ii) A simple microscope is used for watch repairs.

10

(iii) It is necessary to manage the space debris.

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(B) Answer the following questions (any three) :

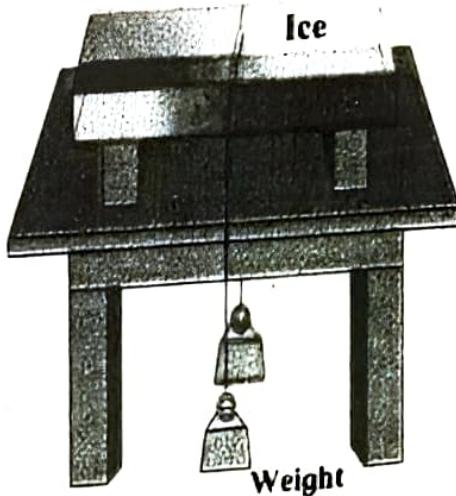
6

- (i) The absolute refractive index of water is 1.33. What is the velocity of light in water ?

(Velocity of light in vacuum =  $3 \times 10^8$  m/s)

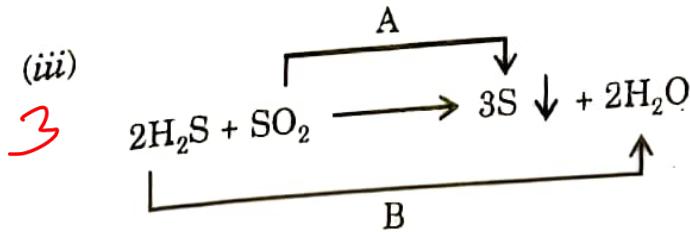
- (ii) Observe the figure and answer the questions given below.

S



- (a) Name the phenomenon shown in the figure.

- (b) Define the above phenomenon.



- (a) Identify the above chemical reaction.

- (b) Name the type of reaction in A and B.

# 6/N 405

(iv) Rearrange the column 2 and 3 so as to match with the  
2 column 1.

Column 1	Column 2	Column 3
(1) Triad	Concentrated mass and +ve charge	Thomson
(2) Octave	Average of the atomic masses of first and third element	Newlands
	Properties of the eighth element are similar to first	Dobereiner

(v) Define the following terms :

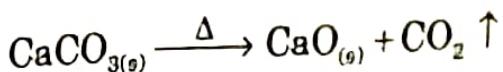
(a) Escape velocity

(b) Free fall.

## 3. Answer the following questions (any five) :

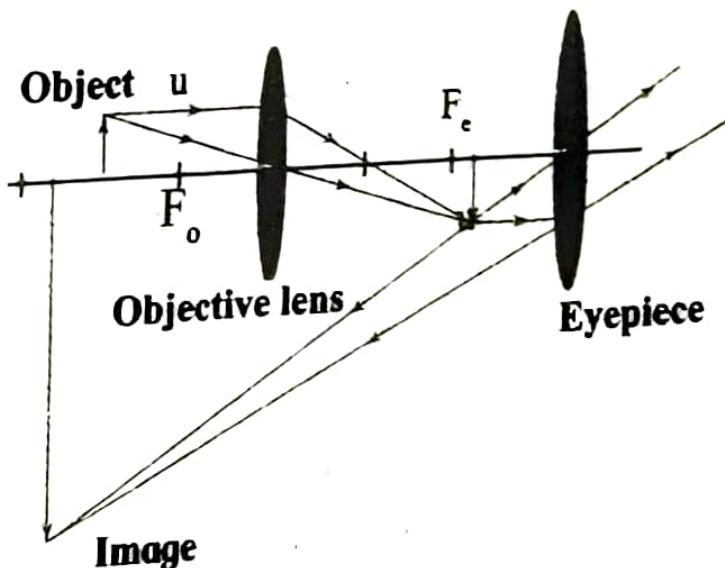
(i) What information will you get from the given reaction ?

**3**



(ii) Observe the following ray diagram and answer the questions given below :

**X**



- (a) Identify the instrument shown in the diagram.
- (b) What is the combined effect of two lenses ?
- (c) Write the use of the above instrument.

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- (iii) Read the following paragraph and answer the questions given below :

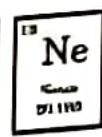
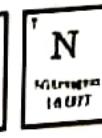
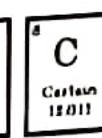
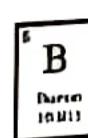
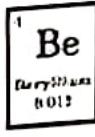
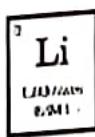
Rainbow is a beautiful natural phenomenon. It is the combined effect of dispersion, refraction and total internal reflection of light. It can be seen mainly after rainfall. Small droplets of water act as small prisms. When light rays from the sun enter these droplets it gets refracted and dispersed. Then there is internal reflection and after that once again the light gets refracted while coming out of the droplet. All these three processes together produce the rainbow.

- (a) Which *three* major phenomena are responsible for rainbow formation ?
- (b) How does refraction take place ?
- (c) Draw a diagrammatic representation of rainbow production.

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(iv) From the elements of second period of the modern periodic table

2 given below, answer the following questions :



(a) Name the elements in which both the shells are completely filled with electrons.

(b) Name the element which has same number of electrons in both the shells.

(c) Which is the most electropositive element in this period ?

(v) Explain on which factor the value of acceleration due to gravity 'g'

1 depends.

(vi) Explain the following terms :

8 (a) Metallurgy

(b) Ores

(c) Gangue.

# 10/N 405

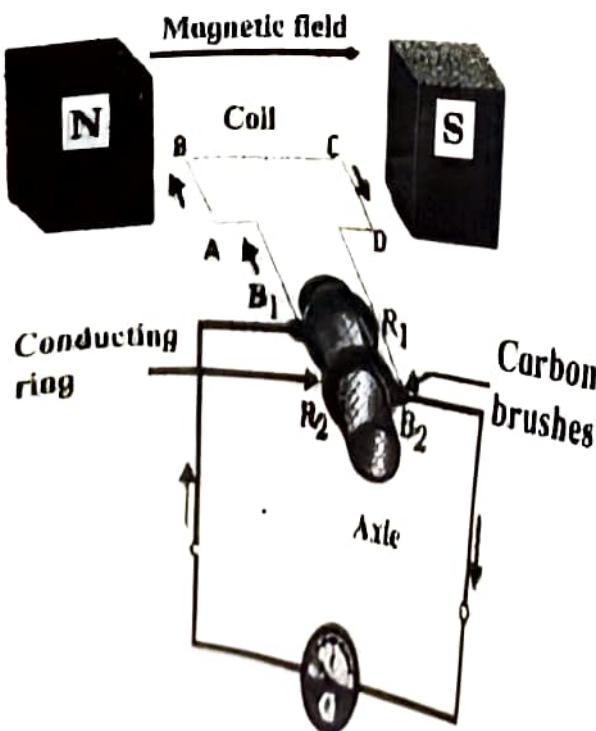
(vii) Give the names of the following satellite series developed by  
**10** India :

- (a) Satellite series actively working in the field of telecommunication, television and meteorological services.
  - (b) Satellite series specially working in the field of education.
  - (c) Satellite series to exactly locate position of any place on earth's surface.
- (viii) (a) What is meant by anomalous behaviour of water ?  
**5** (b) Explain the role of anomalous behaviour of water in preserving aquatic life in cold climate.

**Answer the following question (any one) :**

**4.** (i) Observe the following diagram and answer the questions given

**4** below :



# 11/N 405

- (a) Identify the above diagram. 1
- (b) Write the principle on which the above appliance works ? 1
- (c) Write the working of the above appliance. 2
- (d) Write the use of the above appliance. 1
- (ii) Read the following paragraph and answer the questions given below :
- 9
- Carbon compounds contain many elements. The element hydrogen is present to a smaller or larger extent in majority of carbon compounds. The compounds which contain carbon and hydrogen as the only two elements are called hydrocarbons. Hydrocarbons are the simplest and the fundamental organic compounds. The smallest hydrocarbon is methane ( $\text{CH}_4$ ), formed by combination of one carbon atom and four hydrogen atoms. We have already seen the structure of methane. Ethane is one more hydrocarbon. Its molecular formula is  $\text{C}_2\text{H}_6$ .

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The carbon compounds having a double bond or triple bond between two carbon atoms are called unsaturated compounds. Ethene and ethyne are unsaturated hydrocarbons. The unsaturated hydrocarbons containing a carbon-carbon double bond are called 'Alkenes'. The unsaturated hydrocarbons whose structures contain a carbon-carbon triple bond are called 'Alkynes'. Generally the unsaturated compounds are more reactive than the saturated compounds.

(a) What is meant by hydrocarbon ?

1

(b) Name the smallest hydrocarbon.

1

(c) Define unsaturated compound.

1

(d) Differentiate between Alkene and Alkyne.

2