प्र. क्र. Q. No.

1 (A)

(i) (A) (1 mark)

(ii) (D) (1 mark)

(iii) (C) (1 mark)

(iv) (D) (1 mark)

(v) (A) (1 mark)

1 (B)

(i) True (1 mark)

(ii) Magnet (1 mark)

(iii) Stars twinkles due to changing refractive index of atmospheric gases. (1 mark)

(iv) Simple microscope – used for watch repair (1 mark)

(v) The behaviour of water between its temperature from 0°C to 4°C is called Anomalous behaviour of water. (1 mark)

प्र. क्र.
Q. No. **2 (A)**

Note : *In this question, students are required to write answers of any 2 questions out of 3. However, answers to all 3 questions are given here for the guidance of the students.*

(i) (1) In a period while going from left to right, atomic radius goes on decreasing and the atomic number increases one by one, that means positive charge on the nucleus increases by one unit at a time. ***(1 mark)***

(2) However, the additional electron is added to the same outermost shell. Due to the increased nuclear charge, the electrons are pulled towards the nucleus to a greater extent, as a result the size of atom decreases, i.e. atomic radius decreases. ***(1 mark)***

(ii) (1) Copper and aluminium are good conductors of electricity. ***(1 mark)***

(2) Copper and aluminium have very low resistivity. Hence, when an electric current flows through a wire of copper or aluminium, heat produced is comparatively low. Therefore, for electric power transmission, copper or aluminium wire is used. ***(1 mark)***

(iii) (1) On combustion in sufficient air, ethanol gives carbon dioxide and water as the only products. ***(1 mark)***

(2) In this way, ethanol is a clean fuel. Therefore, in some countries it is used as an additive to increase the efficiency of petrol. ***(1 mark)***

प्र. क्र. Q. No. **2 (B)**

Note : *In this question, students are required to write answers to any 3 questions out of 5. However, answers to all 5 questions are given here for the guidance of the students.*

(i) (1) Principle of heat exchange is used to measure the specific heat capacity of a substance. **(1 mark)**

(2) According to the Principle of heat exchange, the heat energy lost by the hot object is equal to the heat energy gained by the cold object. **(1 mark)**

(ii) (1) Fix a layer of some substance on the metal surface so that the contact of the metal with moisture and oxygen in the air is prevented and no reaction would occur between them. **(1 mark)**

(2) To prevent corrosion of metals, apply a layer of paint, oil, grease or varnish on their surface. For example, corrosion of iron can be prevented by this method. **(1 mark)**

(iii)

Mass	Weight
(1) The mass of a body is the amount of matter present in it.	(1) The weight of a body is the force with which the earth attracts it.
(2) It has magnitude, but not direction.	(2) It has both magnitude and direction.
(3) It does not change from place to place.	(3) It changes from place to place.
(4) It can never be zero.	(4) It is zero at the centre of the earth.
(5) Its SI unit is kilogram.	(5) Its SI unit is newton.

(Any two points : 1 mark each; total 2 marks)

(iv) (a) The launcher is a rocket. **(1 mark)**

(b) The working of the rocket is based on Newton's third law of motion. **(1 mark)**

प्र. क्र.
Q. No. **2 (B)**

(v) The chemical reaction in which two or more products are formed from a single reactant is called a decomposition reaction. ***(1 mark)***

When sugar is heated, it decomposes to form carbon (black substance) and water.

$$C_{12}H_{22}O_{11} \xrightarrow{\Delta} 12C + 11H_2O(g)$$ ***(1 mark)***

Sugar — Carbon

प्र. क्र.
Q. No. **3**

***Note :** In this question, students are required to solve any 5 questions out of 8. However, answers to all 8 questions are given here for the guidance of the students.*

(i) Data : $m = 3$ kg, $s = h = 125$ m, $a = g = 10$ m/s^2, $u = 0$ m/s, $t = ?$ and $v = ?$

(a) According to Newton's second equation of motion,

$s = ut + \frac{1}{2}at^2$ **(½ mark)**

$\therefore 125 = 0 \times t + \frac{1}{2} \times 10 \times t^2$ **(½ mark)**

$\therefore 125 = 5t^2$

$\therefore t^2 = \frac{125}{5} = 25$ **(½ mark)**

$\therefore t = 5$ s **(½ mark)**

The ball takes 5 s to reach the ground.

(b) According to Newton's first equation of motion,

$v = u + at$ **(½ mark)**

$\therefore v = 0 + 10 \times 5 = 50$ m/s **(½ mark)**

The velocity of the ball on reaching the ground is 50 m/s.

(ii) (a) The most electronegative atom is fluorine (F_2) **(1 mark)**

(b) The atom having smallest atomic mass is Hydrogen (H_2) **(1 mark)**

(c) The noble gas with the smallest atomic radius is Helium (He) **(1 mark)**

(iii) (a) When copper is reacted with conc. nitric acid, copper nitrate and reddish brown nitrogen dioxide are formed. **(1 mark)**

(b) $Cu(s) + 4HNO_3(aq) \longrightarrow Cu(NO_3)_2(aq) + 2NO_2(g) + 2H_2O(l)$

Copper; (conc.); Copper nitrate; Nitrogen dioxide **(1 mark)**

(c) Reactants : Copper, conc. nitric acid **(½ mark)**

Products : Copper nitrate, nitrogen dioxide and water. **(½ mark)**

प्र. क्र.
Q. No. 3

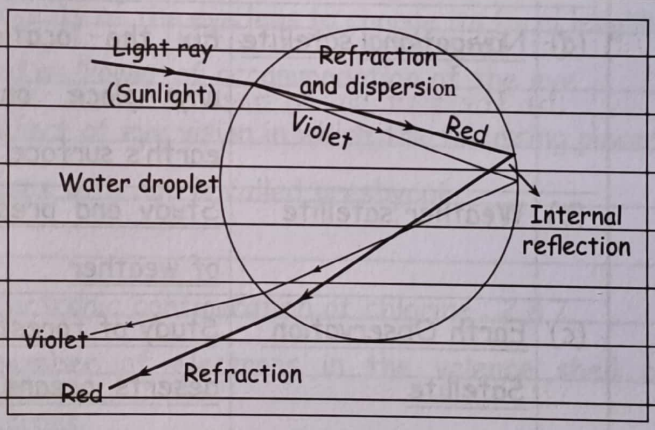
(iv) (a) The given diagram is named as Fleming's right hand rule. ***(½ mark)***

Statement : Stretch the thumb, the index finger and the middle finger of the right hand in such a way that they are perpendicular to each other. In this position, the thumb indicates the direction of the motion of the conductor, the index finger shows the direction of the magnetic field and the middle finger shows the direction of the induced current. ***(1 mark)***

(b) The given diagram is named as Fleming's left hand rule. ***(½ mark)***

Statement : The left hand thumb, index finger and the middle finger are stretched so as to be perpendicular to each other. If the index finger is in the direction of the magnetic field, and the middle finger points in the direction of the current, then the direction of the thumb is the direction of the force on the conductor. ***(1 mark)***

(v) (a)



Formation of a rainbow (Schematic diagram)

(Diagram : 1 mark)

(b) Natural processes involved in formation of rainbow are refraction, dispersion, internal reflection. ***(Any two process : ½ mark each)***

(c) A small droplet of water acts as a prism. ***(1 mark)***

प्र. क्र. Q. No. 3

(vi) (a) Metals which can be cut with a knife are-Lithium, Sodium, Potassium. **(Any two points : ½ mark each)**

(b) A sound is produced when certain metals are struck. This property of metals is called as sonority. **(1 mark)**

(c) The non-metallic substance which is a good conductor of electricity is graphite. **(1 mark)**

(vii) (a) The process shown in the diagram is electroplating. **(1 mark)**

(b) In this process, a less reactive metal is coated on a more reactive metal by electrolysis. **(1 mark)**

(c) Silver plated spoons, gold plated ornaments are the examples in which this process is used. **(1 mark)**

(viii)

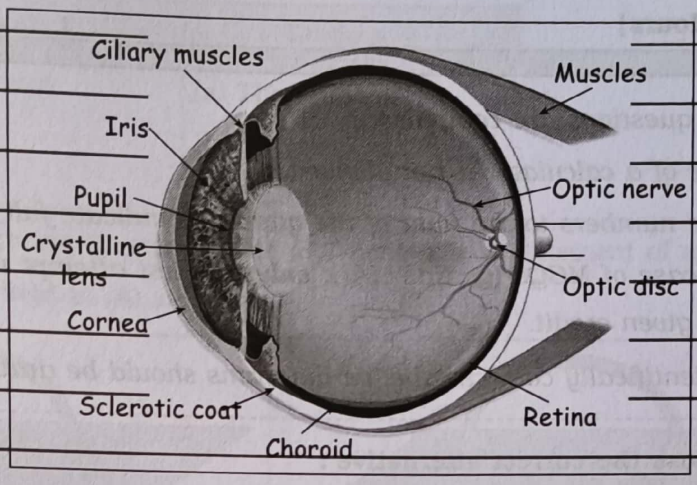
	Type of the satellite	Function of the satellite	The names of the Indian satellite series and their launch vehicles
(a)	Navigational satellite	Fix the location of any place on the earth's surface	IRNSS Launcher : PSLV
(b)	Weather satellite	Study and prediction of weather	INSAT and GSAT Launcher : GSLV
(c)	Earth Observation Satellite	Study of forests, deserts, oceans, polar ice on the earth's surface, exploration and management of natural resources, observation and guidance in case of natural calamities like flood and earthquake.	IRS Launcher : PSLV

(½ mark each point)

प्र. क्र.
Q. No. **4**

Note : *Students are required to solve any one question out of two. However, here both questions have been solved for the guidance of the students.*

(i) (a)



Construction of the human eye

(Correct drawing : 1 mark; Any two correct labels : ½ mark each)

(b) The minimum distance of distinct vision for a normal human eye is 25 cm. ***(1 mark)***

(c) The capacity of the eye lens to change its focal length as per need is called as 'Power of accommodation of the eye'. ***(1 mark)***

(d) The defect of eye vision in which the focussing power of eye lens decreases with age is called presbyopia. ***(1 mark)***

(ii) (a) The electronic configuration of chlorine : 2,8,7. ***(1 mark)***

(b) The number of electrons in the valence shell of chlorine : 7 electrons. ***(1 mark)***

(c) The molecular formula of chlorine : Cl_2. ***(1 mark)***

(d) The type of bond in the formation of chlorine molecule : Covalent bond. ***(1 mark)***

(e) The electron dot structure of a chlorine molecule :

$$:\ddot{Cl}:\ddot{Cl}: \longrightarrow :\ddot{Cl}:\ddot{Cl}: \longrightarrow Cl-Cl$$ ***(1 mark)***