N 840

Seat No. | | | | | | | |

2025 III 10 1100 – N 840 – SCIENCE AND TECHNOLOGY (72) – PART I (E)

(REVISED COURSE)

Time : 2 Hours (Pages 11) 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.

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

(*i*) Alkaline earth metals have valency 2. This means that their position in the modern periodic table is in ..... .

(A) Group 2

(B) Group 16

(C) Period 2

(D) *d*-block

(*ii*) The reaction in which ions in the reactants are exchanged to form a precipitate is called as ..... reaction.

(A) Combination

(B) Decomposition

(C) Displacement

(D) Double Displacement

(*iii*) ..... is used to make a solenoid type coil in an electric bulb.

(A) Nichrome

(B) Copper

(C) Tungsten

(D) Aluminium

(*iv*) Light changes its direction when going from one transparent medium to another transparent medium. This process is called ..... .

(A) Reflection

(B) Dispersion

(C) Scattering

(D) Refraction

(v) $CaO + H_2O \longrightarrow Ca(OH)_2 + Heat$ is an example of ..... reaction.

(A) Exothermic

(B) Electrolysis

(C) Decomposition

(D) Endothermic

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

(i) State whether true or false :

A redox reaction takes place during cellular respiration.

(ii) Find the odd one out :

Loudspeaker, microphone, electric motor, magnet.

(iii) What is the reason for twinkling of stars ?

(*iv*) Match the columns :

Column 'A'	Column 'B'
Simple microscope	(*a*) used to observe minute objects
	(*b*) used to see distant objects
	(*c*) used for watch repair

(*v*) Name the behaviour of water between its temperature from 0°C to 4°C.

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

(*i*) While going from left to right within a period, the size of atom decreases.

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(*ii*) For electric power transmission, copper or aluminium wire is used.

(*iii*) In some countries, ethanol is used as an additive to increase the efficiency of petrol.

(B) **Answer the following (any *three*) :** **6**

(*i*) Name and state the principle used to measure the specific heat capacity of a substance.

(*ii*) What is done to prevent rusting of iron door of your house ?

(*iii*) Distinguish between mass and weight.

(*iv*) The 'rocket' is a type of fire cracker used in Diwali.

(*a*) Name the launcher.

(*b*) Name the law on which its working is based.

(*v*) What is meant by decomposition reaction ? Write the chemical reaction of decomposition of sugar on heating.

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 m/s^2, calculate :

(*a*) Time taken by the ball to reach the ground.

(*b*) Velocity of the ball on reaching the ground.

(*ii*) Write the name and symbol of the element from the description :

(*a*) The most electronegative atom.

(*b*) The atom having smallest atomic mass.

(*c*) The noble gas with the smallest atomic radius.

(*iii*) (*a*) What happens when copper reacts with concentrated nitric acid ? What is the colour of the gas released during the reaction ?

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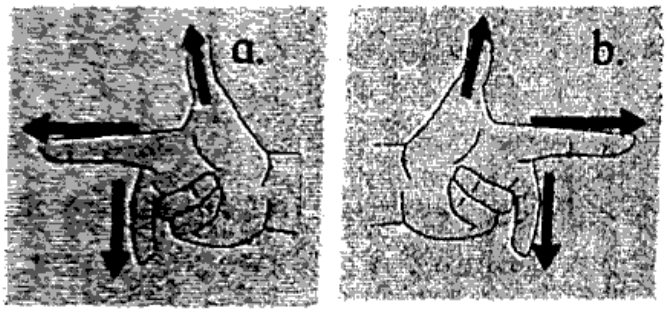
(b) Write its balanced chemical equation.

(c) Write the names of reactants and products.

(iv) Name the following diagrams and explain the concept behin them :



(v) Answer the following with respect to the 'Formation of Rainbow' :

(a) Draw a neat diagram to show the formation of rainbow.

(b) Name any *two* natural processes involved in formation of rainbow.

(c) What does a small droplet of water act as ?

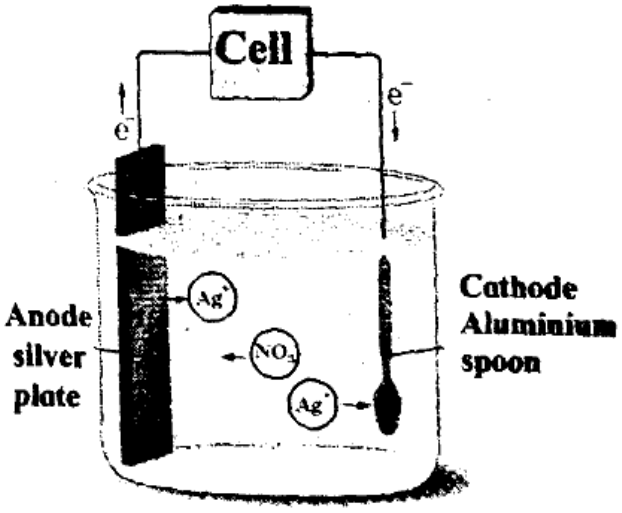
(vi) Name the following :

(a) The *two* metals which can be cut with knife.

(*b*) A sound is produced when certain metals are struck. Name this property of metals.

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

(*vii*) Answer the following questions with the help of the given diagram :



(*a*) Name the process shown in the diagram.

(*b*) How does this process take place ?

(*c*) Give *two* examples in which this process is used.

(*viii*) Complete the following table :

	Type of the satellite	Function of the satellite	The names of the Indian satellite series and their launch vehicles
(*a*)	.....	Fix the location of any place on the earth's surface	.....
(*b*)	Weather satellite	.....	.....
(*c*)	.....	.....	IRS Launcher : PSLV

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

(*i*) (*a*) Draw a neat labelled diagram of human eye.

(*b*) What is the minimum distance of distinct vision for a normal human eye ?

(c) Name the capacity of the eye lens to change its focal length as per need.

(d) Name the defect of eye vision in which the focussing power of eye lens decreases with age.

(ii) Atomic number of chlorine is 17.

(a) Write the electronic configuration of chlorine.

(b) What is the number of electrons in the valence shell of chlorine ?

(c) Write the molecular formula of chlorine.

(d) Name the type of bond in the formation of chlorine molecule.

(e) Draw the electron dot structure of a chlorine molecule.