N 197

Seat No. | | | | | | | |

2021 IX 30 1030 -N 197 – 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 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.

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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

(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

(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 :

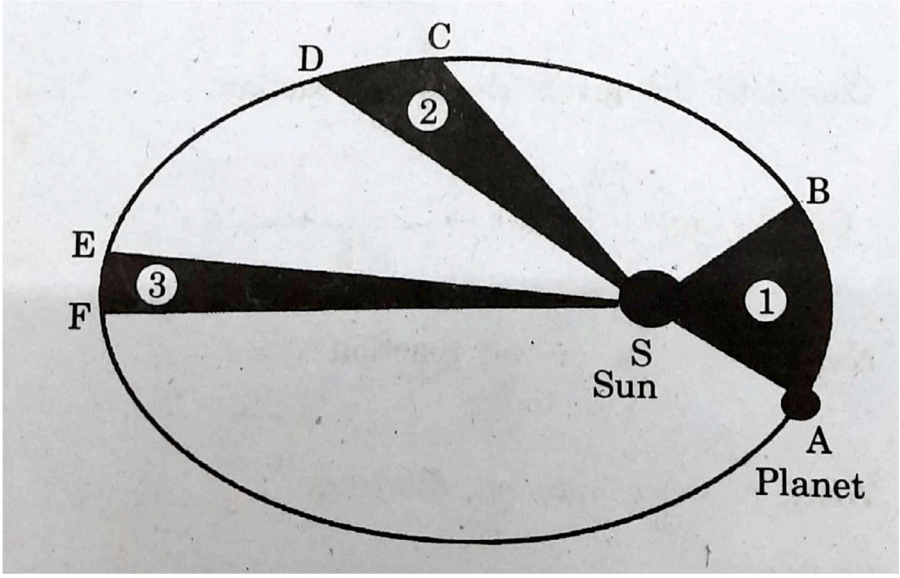
Object is at unlimited distance : Point is at focus F1 ::

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.

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



(iv) Match the columns:

Column 'A'	**Column 'B'**
Anomalous behaviour of water	(a) 0°C to -10°C
	(b) 0°C to 4°C
	(c) 0°C to 10°C

(v) What is meant by space debris?

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

(i) Elements belonging to the same group have the same valency.

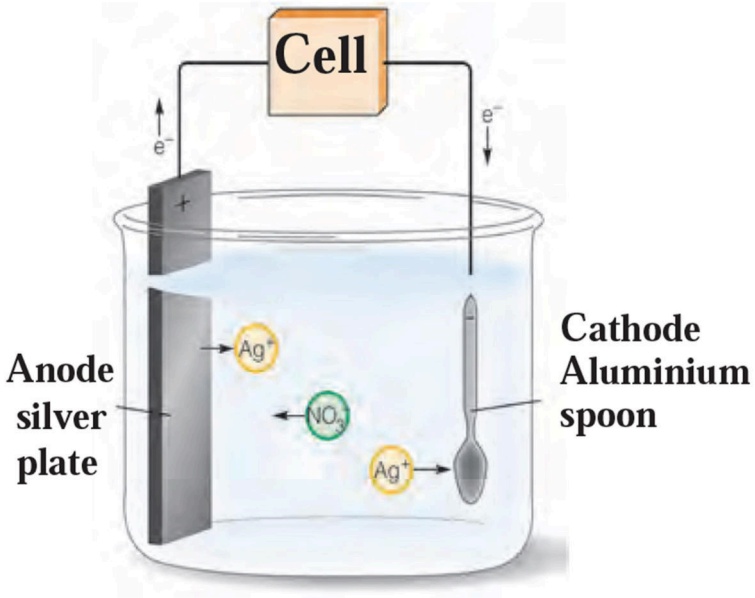
(ii) It is necessary to connect earth wires in home electric connection.

(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? ($g = 10\ m/s^2$)

ii. Identify the process described in the sketch below and write any two uses.



iii. Explain the law of refraction.

iv. Balance the following chemical equation

(Do not write step by step)

(a) $H_2S + SO_2 \rightarrow S\downarrow + H_2O$

(b) $MnO_2 + HCl \rightarrow MnCl_2 + H_2O + Cl_2\uparrow$

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.

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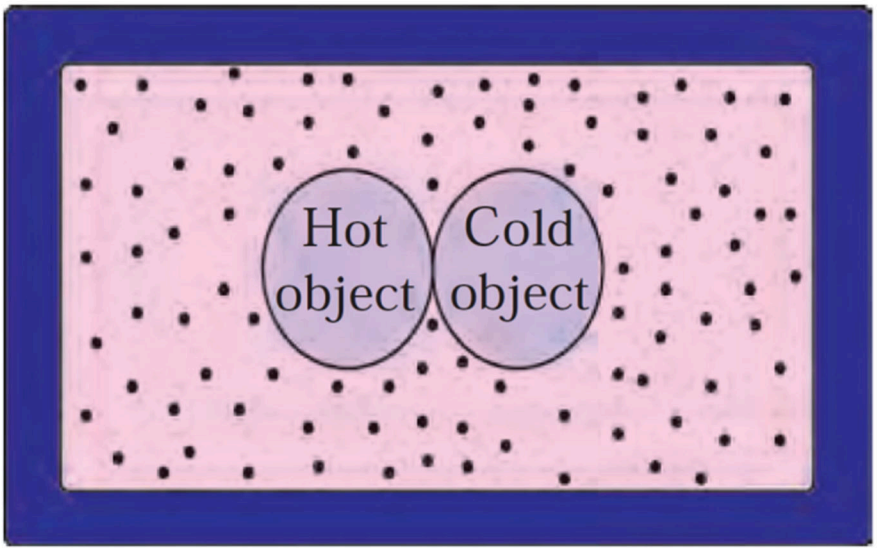
(ii) Answer the following questions with the help of following diagram.



(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?

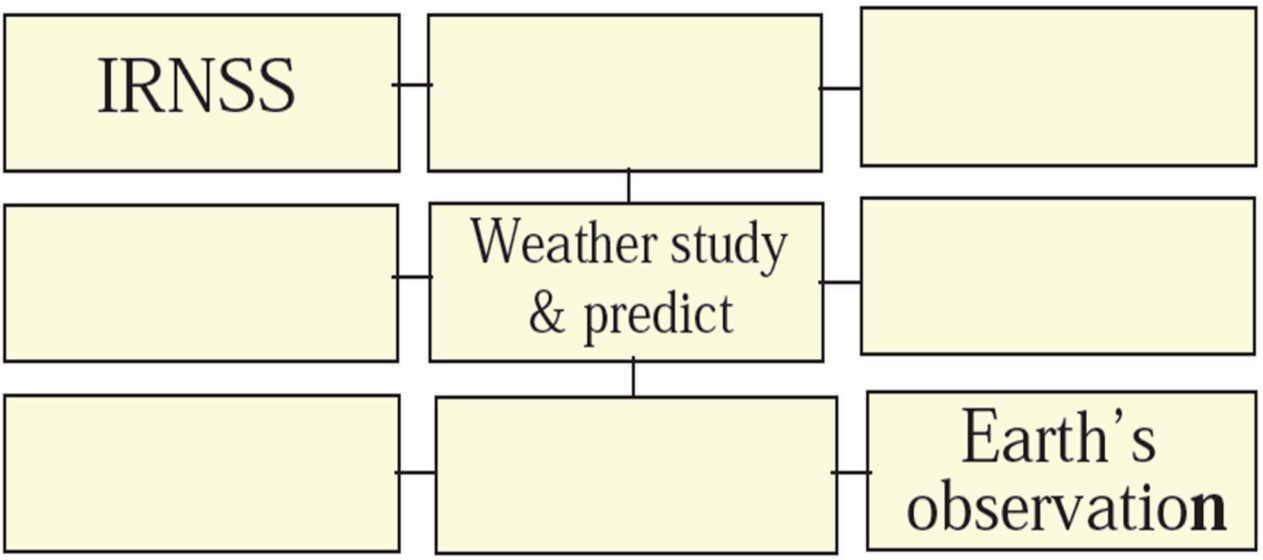
(iii) The electronic configuration of metal 'A' is 2,8,1 and that of metal 'B' is 2,8,2.

(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:



(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.

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.