N 631

Seat No. | | | | | | | |

2019 III 15 1100 – N 631 – SCIENCE AND TECHNOLOGY (72) – PAPER I (E)

(NEW COURSE)

Time : 2 Hours (Pages 9) Max. 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.**

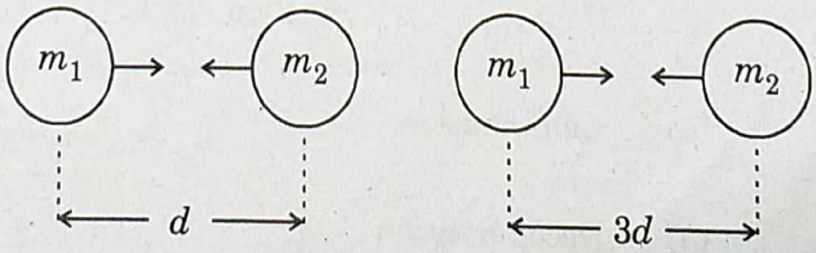
(*v*) **For each MCQ (i.e. Q. No. 1-B) evaluation would be done for first attempt only.**

(*vi*) **For each MCQ correct answer must be written along with its alphabet.**

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

1. (A) **Answer the following questions :** **5**

(1) Write proper answer in the box :



If $F = \frac{Gm_1m_2}{d^2}$, then F = ☐

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(2) 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.

(3) State whether the given statement is true *or* false :

A concave lens is a converging lens.

(4) By considering first correlation complete the second correlation :

Hubble telescope : 569 km high from earth surface

Revolving orbit of Hubble telescope : [ ]

(5) Find the odd man out :

Tinning, Anodization, Alloying, Froth floatation.

(B) Choose the *correct* alternative : **5**

(1) The reaction of iron nail with copper sulphate solution is ..... reaction.

(*a*) Combination

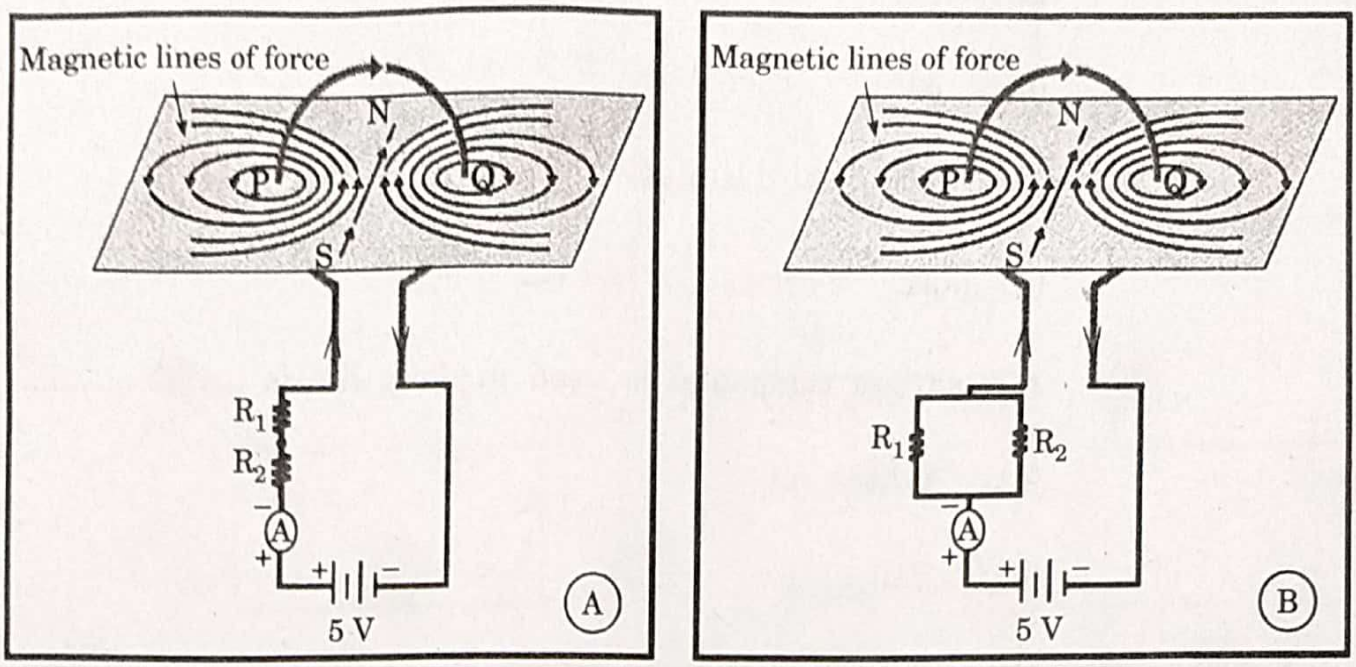
(*b*) Decomposition

(*c*) Displacement

(*d*) Double displacement

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(2) Observe the following diagram and choose the correct alternative :



(*a*) The intensity of magnetic field in A is larger than in B.

(*b*) The intensity of magnetic field in B is less than in A.

(*c*) The intensity of magnetic field in A and B is same.

(*d*) The intensity of magnetic field in A is less than in B.

(3) A ray of light makes an angle of 50° with the surface S_1 of the glass slab. Its angle of incidence will be ..... .

(*a*) 50°

(*b*) 40°

(*c*) 140°

(*d*) 0°

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(4) Water expands on reducing its temperature below .....°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**

(1) 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 ?

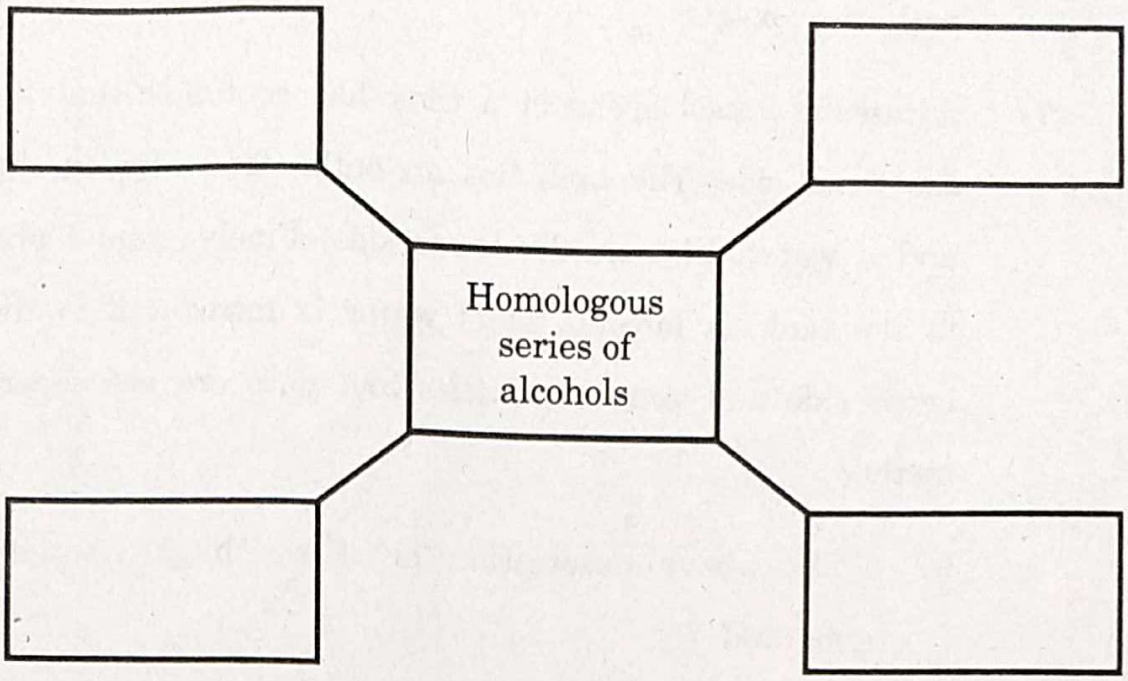
(2) Give scientific reason :

In the electric equipment producing heat e.g. iron, electric heater, boiler, toaster etc., an alloy such as Nichrome is used, not pure metals.

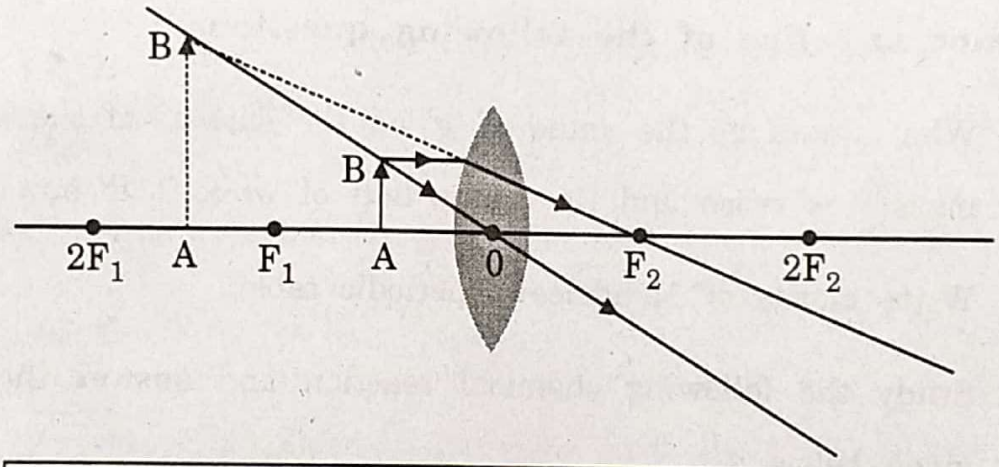
(3) A metal ball of mass 5 kg falls from a height of 490 m. How much time it will take to reach the ground ? (g = 9.8 m/s^2)

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(4) Write names of first four homologous series of alcohols :



(5) 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	

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(6) Out of sodium and sulfur which is a metal ? Explain its reaction with the oxygen.

(7) 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.

(*i*) The above description is of which gravitation separation method ?

(*ii*) 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 :

$$AgNO_{3(aq)} + NaCl_{(aq)} \longrightarrow \underset{\text{(Precipitate)}}{AgCl_{(s)}\downarrow} + NaNO_{3(aq)}$$

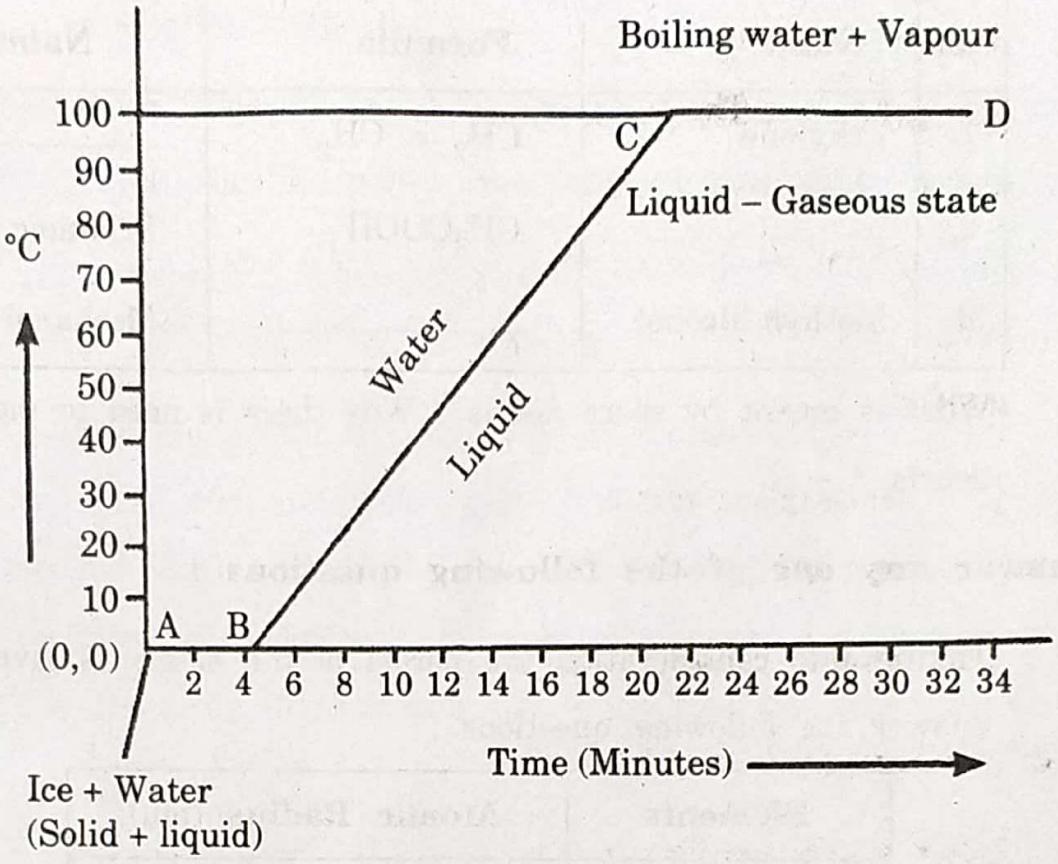
(*i*) Identify and write the type of chemical reaction.

(*ii*) Write the definition of above type of chemical reaction.

(*iii*) Write the names of reactants and products of above reaction.

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(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.

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(6) Complete the following table :

Sr. No.	Common Name	Structural Formula	IUPAC Name
1.	Ethylene	$CH_2 = CH_2$	.....
2.	.....	CH_3COOH	Ethanoic acid
3.	Methyl alcohol	.....	Methanol

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

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.

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(*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.

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