

# MT

2018 \_\_\_\_ 1100

Seat No. 

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## MT - SCIENCE & TECHNOLOGY -I (72) - SEMI PRELIM - I : PAPER - 5

**Time : 2 Hours**

**(Pages 4)**

**Max. Marks : 40**

Note :

- (i) All questions are compulsory.
- (ii) Draw neat and labelled diagrams wherever necessary.

**Q.1. (A) Solve the following questions : 5**

- (1) **Fill in the blank :**  
During transformation of liquid phase to solid phase, the latent heat is called .....
- (2) **Fill in the blank :**  
Copper reacts with moist carbon dioxide in air and slowly loses its shine to gain a green coat of .....
- (3) **State whether following statement are true or false. If false; rectify the statement.**  
At 4°C the volume of water is maximum.
- (4) **State whether the following statements are true or false. If false, rewrite the correct statements:**  
Saturated hydrocarbons burn with smoky flame.
- (5) In electric generator, when will the induced current in the coil be maximum?

**Q.1. (B) Choose the correct alternative and rewrite the sentences : 5**

- (1) Silver articles become black on prolonged exposure to air. This is due to the formation of .....  
(a)  $\text{Ag}_3\text{NO}_3$                       (b)  $\text{Ag}_2\text{O}$   
(c)  $\text{Ag}_2\text{S}$                               (d)  $\text{Ag}_2\text{S}$  and  $\text{Ag}_3\text{NO}_3$

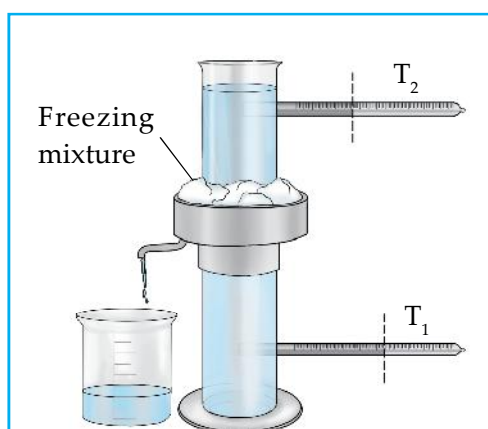
- (2) The deflection of the pointer of ..... is on either side of zero mark.  
(a) Voltmeter (b) Ammeter  
(c) Galvanometer (d) Thermometer
- (3) When water boils and is converted into steam, then .....  
(a) heat is taken in and temperature remains constant.  
(b) heat is taken in and temperatures rises.  
(c) heat is given out and temperatures lowers.  
(d) heat is given out and temperature remains constant.
- (4) Ethanol is used as an additive to increase the efficiency of petrol such a fuel is called .....  
(a) ethanol (b) cananol  
(c) gasohol (d) methanol
- (5) If temperature of water is lowered from 4°C to 3°C, its volume .....  
(a) increases (b) decreases  
(c) remains the same (d) fluctuates

**Q.2. Solve the following questions : (Any 5)****[10]**

- (1) **Give Scientific Reason:**  
Generally the ionic compounds have high melting points.
- (2) A cell is connected to a 9 ohm resistance, because of which heat of 400 J is produced per second due to current flowing through it. Obtain the potential difference applied across the resistance.
- (3) **Write structural formula for the following IUPAC name.**  
Propan - 2 ol : Molecular formula-  $C_3H_7OH$
- (4) **Distinguish between :** Heat and temperature.
- (5) **Write chemical equation for the following reaction:**  
A reaction was brought about between ferric oxide and aluminium.
- (6) **Differentiate between:** Ethanol and Ethanoic acid (physical properties)
- (7) An electric iron of 1100 W is operated for 2 hrs daily. What will be the electrical consumption expenses for that in the month of April? (The electric company charges ₹ 5 per unit of energy).

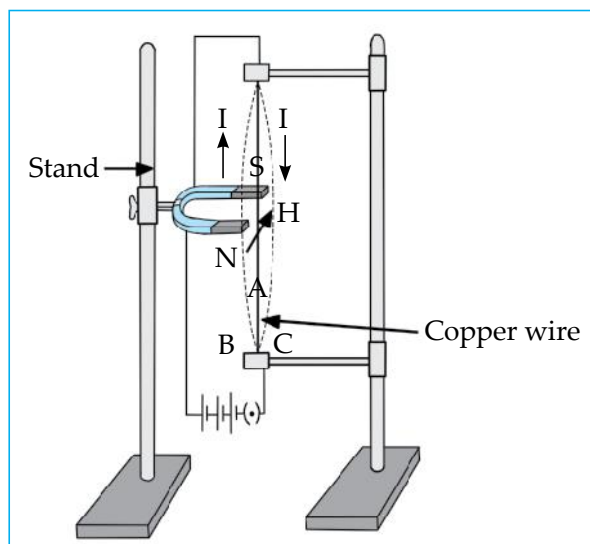
**Q.3. Solve the following questions : (Any 5)****[15]**

- (1) How much time a satellite in an orbit at height 35780 km above earth's surface would take, if the mass of the earth would have been four times its original mass? (Consider the tangential velocity  $(v) = 3.08 \text{ km/s}$ )
- (2) An electrical iron uses a power of 1100 W when set to higher temperature. If set to lower temperature, it uses 330 W power. Find out the electric current and the respective resistance when connected to a 220 V supply.
- (3) Answer the following questions based on the diagram below:



- (i) When the temperature of water decreases from  $4^{\circ}\text{C}$  to  $2^{\circ}\text{C}$  will the level of water rise or fall in the cylinder?
  - (ii) Which of the two thermometers,  $T_1$  or  $T_2$ , will show a temperature of  $0^{\circ}\text{C}$  first?
  - (iii) Pipe lines crack in winter season in cold countries due to which phenomena?
- (4) (a) Identify the type of the following reaction of carbon compounds.  
 $\text{CH}_3-\text{CH}_3 + \text{Cl}_2 \rightarrow \text{CH}_3-\text{CH}_2-\text{Cl} + \text{HCl}$
  - (b) Explain Esterification reaction with example.

- (5) Answer the following based on the diagram given below.

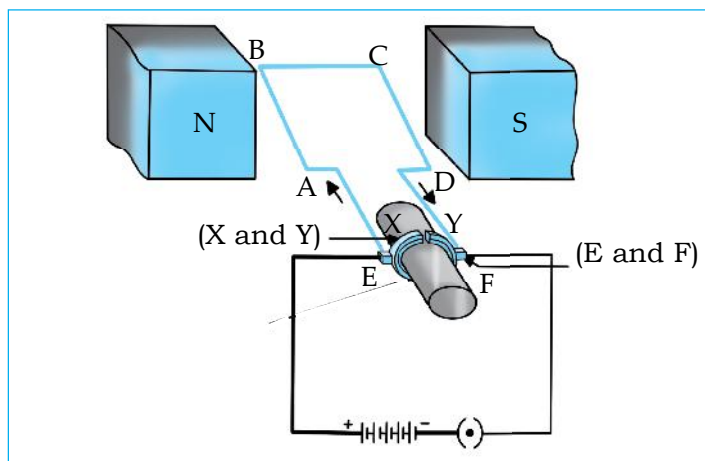


- (i) What is the direction of the force experienced by the conductor when the direction of current is downwards?
- (ii) If the conductor experiences a force inwards, then what would be the direction of current?
- (iii) Which rule helps us to find the force experienced by a current carrying conductor in the above diagram?
- (6) (a) Draw neat labelled diagram of Thermit welding.  
(b) Define Metallurgy.
- (7) What is a catalyst? Write any one reaction which is brought about by use of catalyst.

[5]

**Q.4. Solve the following questions : (Any 1)**

- (1) How can corrosion of metals be prevented?
- (2) From diagram below answer the following questions :



- (a) Define Motor.
- (b) State the principle on which an electric motor works.
- (c) Name 4 components of an Electric motor
- (d) Describe the working of Electric motor.

**Best Of Luck** 🍀