

MT

2018 ___ ___ 1100

Seat No.

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MT - SCIENCE & TECHNOLOGY -I (72) - SEMI PRELIM - I : PAPER - 6

Time : 2 Hours

(Pages 5)

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 :**
The force acting on a current carrying conductor is maximum when the direction of current is to the direction of magnetic field.
- (2) **Select the odd man out:**
Water, Ammonia, Sodium chloride, Hydrogen chloride.
- (3) **State whether following statement are true or false. If false; rectify the statement.**
Density of water is maximum at 4°C.
- (4) **State whether the following statement is true or false. If false, rewrite the correct statements:**
Generally most of the carbon compounds are found to be good conductors of electricity.
- (5) **Find the odd word out.**
Voltmeter, Ammeter, Thermometer, Galvanometer

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

- (1) Cinnabar is an ore of
 - (a) Aluminium (b) Sodium
 - (c) Iron (d) Mercury

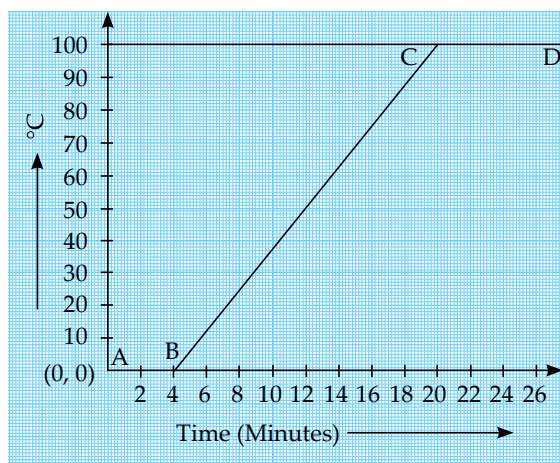
- (2) If temperature of water increases from 1°C to 3°C, the density of water
(a) remains the same (b) decreases
(c) increases (d) fluctuates
- (3) Which one of the following is a Low Earth Orbit (LEO) satellite?
(a) Navigational satellite
(b) Geostationary satellite
(c) International Space Station
(d) All of the above
- (4) What are the products obtained on complete combustion of hydrocarbons?
(a) CO + H₂O (b) CO₂ + H₂
(c) CO₂ + H₂O (d) CO + H₂
- (5) If the potential difference across a wire is 2 V and the current through the wire is 1 A, the electric power is
(a) 4 W (b) $\frac{1}{2}$ W
(c) 2 W (d) $\frac{1}{4}$ W

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

- (1) **Give Scientific Reason:**
Lemon or tamarind is used for cleaning copper vessels turned greenish.
- (2) **Distinguish between :** AC generator and DC generator
- (3) **Write structural formula for the following IUPAC names.**
Butanone: Molecular formula C₄H₈O
- (4) Define Relative humidity.
- (5) **Write chemical equation for the following reaction:**
Copper reacts with dilute nitric acid.
- (6) **Differentiate between :** Alkenes and Alkynes.
- (7) Why are geo-stationary satellites not useful for studies of polar regions?

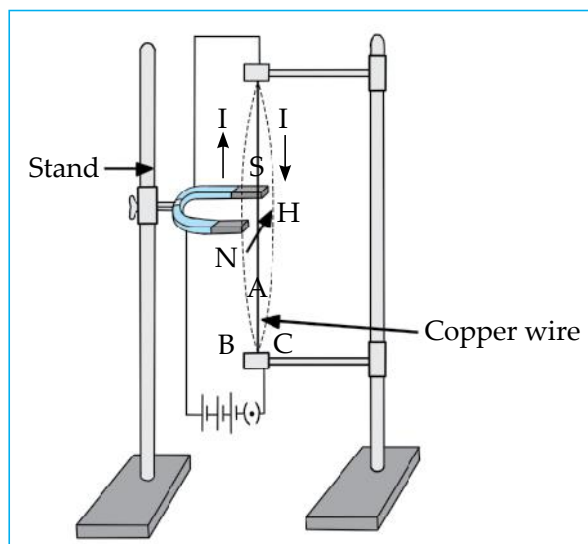
Q.3. Solve the following questions : (Any 5)**[15]**

- (1) Answer the following based on graph:

*Temperature vs Time Graph*

- Which part of the graph shows a change from ice to water at constant temperature?
 - Which part of the graph shows change in temperature without change in state.
 - Define : Latent heat of Vapourization.
- (2)
- Define Dew point.
 - On what basis and how will you determine whether air is saturated with vapour or not?
- (3)
- What is the commercial unit used for measuring Electrical energy?
 - Heat energy is being produced in a resistance in a circuit at the rate of 100 W. The current of 3 A is flowing in the circuit. What must be the value of the resistance?
- (4)
- Identify the type of the following reaction of carbon compounds.
 $\text{CH}_3\text{-CH}=\text{CH}-\text{CH}_3 + \text{Br}_2 \rightarrow \text{CH}_3\text{-CHBr}-\text{CHBr}-\text{CH}_3$
 - How is the transformation of ethanol into ethanoic acid an oxidation reaction?

- (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 a neat and labelled diagram of Hydraulic separation method.
- (b) Define Electroplating.
- (7) What are macromolecules ? Explain Natural and manmade macromolecule.

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

[5]

- (1) Describe the following general methods for the concentration of ore with neat labelled diagram :
- (i) Magnetic separation method
- (ii) Froth floatation method

- (2) Read the following paragraph carefully and answer the following questions:

If heat is exchanged between a hot and cold object, the temperature of the cold object goes on increasing due to gain of energy and the temperature of the hot object goes on decreasing due to loss of energy.

The change in temperature continues till the temperatures of both the objects attain the same value. In this process, the cold object gains heat energy and the hot object loses heat energy. If the system of both the objects is isolated from the environment by keeping it inside a heat resistant box (meaning that the energy exchange takes place between the two objects only), then no energy can flow from inside the box or come into the box.

- (i) Heat is transferred from where to where?
- (ii) Which principle do we learn about from this process?
- (iii) How will you state the principle briefly?
- (iv) Which property of the substance is measured using this principle.
- (v) When does the heat exchange between two bodies in contact stop?

Best Of Luck 