



**Q.1.A) Multiple choice questions.**

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- 1) ..... reverses the direction of current in the rectangular coil of the electric motor.  
(a) Battery                      (b) Brushes                      (c) Magnet                      (d) Split rings
- 2) The speed of light in vacuum is .....  
(a)  $3 \times 10^5$  m/sec                      (b)  $3 \times 10^8$  m/sec  
(c)  $3 \times 10^5$  km/sec                      (d)  $3 \times 10^8$  m/sec
- 3) Which of the following statements are correct for physical changes?  
(a) A physical change takes place due to change in temperature and pressure.  
(b) It is reversible.  
(c) The composition of matter remains the same in physical change.  
(d) All of the above.
- 4) ..... are used in domestic appliances like mixers, washing machines and refrigerators.  
(a) AC motors                      (b) DC motors                      (c) AC generators                      (d) DC generators
- 5) Which is a property of the gases in group 18?  
(a) malleability                      (b) brittleness  
(c) high electrical conductivity                      (d) unlikely to react with other elements

**Q.1) B) Answer the following .**

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- 1) Find the odd one out.  
Voltmeter, Ammeter, Galvanometer, Thermometer
- 2) Find co-related terms  
Magnetization of iron: physical change :: Rusting of iron : .....
- 3) Match the pair.

Column "A"	Column "B"
i. Specific heat	a. The amount of heat needs to change solid to liquid
ii. Humidity	b. The amount of heat energy required to raise the temperature of a unit mass by $1^\circ\text{C}$
	c. Moisture in the atmosphere.

- 4) State true or false.  
Bromine is lustrous in nature.
- 5) Name the following  
Any two elements from d-block.

**Q.2) A) Give Reasons. (Any Two)**

4

- 1) Geostationary satellites not useful for studies of Polar regions.
- 2) In DC generator, the flow of current in the circuit is in the same direction.
- 3) Rusting of iron is a chemical change, Explain.

**Q.2) B) Solve the following : (Any Three)**

6

- 1) Write short note on Relative humidity.

- 2) Distinguish between Photochemical and Electrochemical Reaction.
- 3) An electric tungsten bulb is connected into a home circuit. The home electric supply runs at 220 V potential difference. When switched on, a current of 0.45A flows through the bulb. What must be power of the bulb? If it is kept on for 10 hours, how many units of electricity will be consumed?
- 4) Name 4 substances whose Specific heat capacity is less than 1.
- 5) Divide the metals Cu, Zn, Ca, Mg, Fe, Na, Li into three groups namely reactive metals, moderately reactive metals and less reactive metals.

**Q.3) Solve the following Questions. (Any Five)**

15

1) Write the IUPAC names of the following structural formulae.

- i.  $\text{CH}_3\text{-CH}_2\text{-CH}_2\text{-CH}_3$
- ii.  $\text{CH}_3\text{-CH}_2\text{-COOH}$
- iii.  $\text{CH}_3\text{-CO-CH}_2\text{-CH}_3$

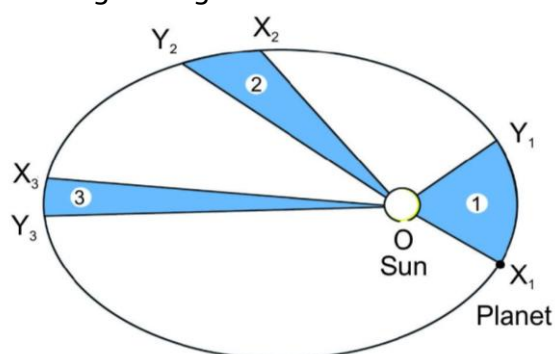
2) An element has its electron configuration as 2,8,8,2. Now answer the following questions.

- i. What is the atomic number of this element?
- ii. What is the group of this element?
- iii. To which period does this element belong?

3) What is corrosion ? Do gold ornaments corrode? If not, why ?

4) Write a short notes on substitution reaction in saturated hydrocarbons.

5) Observe the given figure and answer the following questions.



The orbit of a planet is an ellipse with the Sun at one of its foci. The Sun's position is indicated as 'O'. X<sub>1</sub> Y<sub>1</sub> and X<sub>2</sub> Y<sub>2</sub> are the distances covered by the planet in equal time, X<sub>1</sub>O and X<sub>2</sub>O lines sweep equal area in equal intervals of time. Hence, areas X<sub>1</sub> OY<sub>1</sub> and X<sub>2</sub> OY<sub>2</sub> are equal.

- i. Which laws do we understand from the description given above?
- ii. At what point amongst X<sub>1</sub> and X<sub>2</sub> velocity of the planet be more? Why?
- iii. If shaded area X<sub>3</sub> OY<sub>3</sub> is twice the area X<sub>1</sub> OY<sub>1</sub> then what will be the relation between time taken by the planet to move X<sub>1</sub> to Y<sub>1</sub>, say t<sub>1</sub> and time taken by the planet to move from X<sub>3</sub> to Y<sub>3</sub>, say t<sub>2</sub>?

iv. Kepler's third law is expressed mathematically as  $\frac{1^m}{r^n} = \text{Constant}$ . What are the values of m and n in the given expression?

6) Draw structural formula of compounds from their molecular formula given below.

a)  $C_3H_8$       b)  $C_4H_{10}$       c)  $C_3H_4$

7) Complete the paragraph:

(Rod, Conical, cone, actual image, Brain, brightness or dimness, Retina)

The ..... in our eyes is made up of many light sensitive cells. These cells are shaped like a rod and like a cone. The ..... like cells respond to the intensity of light and give information about the ..... of the object to the brain. The ..... respond to the colour and give information about the colour of the object to the ..... . Brain processes all the information received and we see the ..... of the object. Rod like cell respond to faint light also but ..... cells do not.

8) Draw the isomers of pentane.

**Q.4) Solve the following Questions. (Any One)**

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I) Waves are created on the surface of water when we drop a stone into it. Similarly you must have seen the waves generated on a string when both its ends are held in hand and it is shaken. Light is also a type of wave called the electromagnetic wave. Gamma rays, X- rays, ultraviolet rays, infrared rays, microwave and radio waves are all different types of electromagnetic waves. Astronomical objects emit these waves and we receive them using our instruments. All our knowledge about the universe has been obtained through these waves. Gravitational waves are a very different type of waves. They have been called the waves on the fabric of space-time. Einstein predicted their existence in 1916. These waves are very weak and it is very difficult to detect them. Scientists have constructed extremely sensitive instruments to detect the gravitational waves emitted by astronomical sources. Among these, LIGO (Laser Interferometric Gravitational Wave Observatory) is the prominent one. Exactly after hundred years of their prediction, scientists detected these waves coming from an astronomical source. Indian scientists have contributed significantly in this discovery. This discovery has opened a new path to obtain information about the Universe.

- i. Which type of wave a light ray is ? (1 mark)
- ii. What type of rays are Gravitational waves called ? (1 mark)
- iii. Why are the gravitational waves difficult to detect ? (1 mark)
- iv. Give any four examples of electromagnetic waves. (2 marks)

II) Study the following and answer.

H
Li
<input type="checkbox"/>
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Rb
Cs
Fr

- i. Fill in the missing blocks ?
- ii. Give the electronic configuration of any 3 elements and what similarity do you observe ?
- iii. Identify the group to which all these elements belong with reason ?
- iv. What special name to given to the group ?
- v. To which block does the group belong from s,p,d or f block ?

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