

SECTION – A (PHYSICS)

Very Short Answer Type Questions (1 Mark Question)

- How is voltmeter connected in the circuit to measure potential difference between two points ?

Short Answer Type Questions – I (2 × 2 = 4 Mark Question)

- A piece of wire of resistance R is cut into two equal parts. These parts are then connected in parallel. If the equivalent resistance of this combination is R', then find the ratio R/R'.
- A current through a horizontal power line flows in east to west direction. What is the direction of magnetic field at a point directly below it and at a point directly above it ?

Short Answer Type Questions – II (3 Mark Question)

- Distinguish between conventional and non-conventional sources of energy.

Long Answer Type (5 Mark Question)

- Explain the underlying principle and working of an electric generator by drawing a labelled diagram. What is the function of brushes?

MCQ (1 × 2 = 2 Mark Question)

- A positively charged particle say an alpha particle projected towards west is deflected towards north by a magnetic field. The direction of the magnetic field is :
(A) Upward (B) Downward (C) Towards south (D) Towards east
- Magnitude of magnetic field intensity at a point around a current carrying conductor is B. If the strength of current in the conductor becomes double, then the magnitude of magnetic field intensity at the point around the conductor is :
(A) $\frac{B}{2}$ (B) B (C) $\frac{B}{4}$ (D) 2B

SECTION – B (CHEMISTRY)

Very Short Answer Type Questions (1 Mark Question)

- What is chrome plating?

Short Answer Type Questions – I (2 × 2 = 4 Mark Question)

- Name one metal and one non-metal which exist in liquid state at room temperature ?
- Explain by giving equation, what happens when :
(a) ZnCO_3 is heated in the absence of air ?
(b) a mixture of Cu_2O and Cu_2S is heated ?

Short Answer Type Questions – II (3 Mark Question)

- What is the basic difference in roasting and calcination ? Explain with the help of examples ?

Long Answer Type (5 Mark Question)

- Give reasons.**
Give reasons for the following :
(i) Metals conduct electricity.
(ii) Reaction of nitric acid with metals generally does not evolve hydrogen gas.
(iii) Carbon is not used for obtaining aluminium from aluminium oxide.
(vi) Sodium metal cannot be kept in open vessel.
(v) Magnesium oxide behaves as a basic oxide.

MCQ (1 × 2 Mark Question)

6. When a gas is passed through dry slaked lime a bleaching agent is produced. Then the gas is
 (A) H_2 (B) CO_2 (C) Cl_2 (D) $COCl_2$
7. The chemical reaction involved in the corrosion of iron metal is that of:
 (A) Oxidation as well as displacement (B) reduction as well as combination
 (C) Oxidation as well as combination (D) reduction as well as displacement

SECTION – C (BIOLOGY)**Very Short Answer Type Questions – I (1 Mark Question)**

1. What is the function of olfactory lobe in humans?

Short Answer Type Questions – I (2 × 2 = 4 Mark Question)

2. Name the salivary glands associated with the mouth? Name an enzyme present in saliva?
3. Differentiate between Nastic & Tropic movements with an example?

Short Answer Type Questions – II (3 × 2 = 6 Marks Question)

4. Name the part of neuron which has following functions
 (a) Where information is acquired,
 (b) Through which information travels as an electric impulse, and
 (c) Where the electric impulse must be converted into a chemical signal for onward transmission.
5. Which animal or plant hormone is associated with the following?
 (a) Increased sugar level in blood (b) Promotion of cell division
 (c) Inhibits growth of plants (d) Seed germination (e) Dwarfism (f) Elongation of cells

Long Answer Type (5 Mark Question)

6. (a) A man with blood group A marries a woman with blood group O and their daughter has blood group O. Is this information enough to tell you which of the traits – blood group A or O is dominant? Why or Why not? [2 marks]
 (b) Match Column-I with Column-II. [3 marks]

Column-I		Column-II	
(i)	Calcitonin	(a)	Sweat glands
(ii)	Growth of stem	(b)	Thyroid gland
(iii)	Exocrine	(c)	Gibberellin
(iv)	Long day plants	(d)	Outer region of spinal cord
(v)	Adrenal gland	(e)	Photoperiod is crucial
(vi)	White matter	(f)	Ductless

MCQ (1 × 2 Mark Question)

7. A heterocrine gland is one which:
 (A) Has two distinct parts
 (B) Serve a double function of exocrine and endocrine gland
 (C) Produces two types of hormones
 (D) Occurs in two places
8. The disease diabetes mellitus is the result of:
 (A) Under secretion of insulin (B) Under secretion of thyroxin
 (C) Under secretion of estrogen (D) none of the above

SOLUTIONS**SECTION – A (PHYSICS)**

1. A voltmeter is always connected in parallel across the points between which the P.D. is to be determined.

2. Resistance of each one of the five parts = $\frac{R}{5}$

Resistance of five parts connected in parallel is given by

$$\frac{1}{R'} = \frac{1}{R/5} + \frac{1}{R/5} + \frac{1}{R/5} + \frac{1}{R/5} + \frac{1}{R/5} \quad \text{or} \quad \frac{1}{R'} = \frac{5}{R} + \frac{5}{R} + \frac{5}{R} + \frac{5}{R} + \frac{5}{R} = \frac{25}{R}$$

or $\frac{R}{R'} = 25$

6. A

7. D

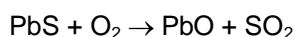
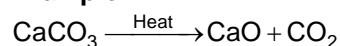
SECTION – B (CHEMISTRY)

1. Coating a layer of chromium over a metal which we would like to prevent from getting rusted. For example bicycle handle.

4. In roasting ore is heated below its melting point in the presence of air and in calcination, the ore is heated in absence of air below its melting point.

Roasting is done with sulphide ores whereas calcinations is carried out for hydrated and carbonate ores.

Example :



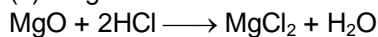
5. (i) Metals conduct electricity because of the presence of free electrons.

(ii) Nitric acid is a good oxidizing agent and it oxidizes the hydrogen into water.

(iii) Aluminium is stronger reducing agent than carbon, therefore carbon cannot be used for the reduction of aluminium oxide into aluminium metal.

(iv) Sodium metal reacts with oxygen of air so vigorously that it catches fire. Hence it is always kept immersed in kerosene oil.

(v) Magnesium oxide reacts with acids to form salt and water so it is a basic oxide.



6. C

7. C

SECTION – C (BIOLOGY)

1. Eye (Retina)

2. Humans show presence of four types of teeth

(i) incisors (ii) canines (iii) premolars (iv) molars

3. It controls the sense of smell in humans.

4. The different types of salivary glands associated with mouth are

(i) Parotid glands (ii) Sub-lingual glands (iii) Sub-maxillary (iv) Infra-orbital (Only in rabbits)

The different enzymes present in saliva are (i) Lysozymes (ii) Ptylin (Salivary amylase)

(iii) lingual lipase

5. (i) Astrocytes (ii) Oligodendrocytes (iii) Schwann cells (iv) Satellite cells (v) Microglial cells
6. The main differences between white matter and grey matter are biological and functional. White matter, which forms the major bulk of the brain, is responsible for transmitting instructions and information within, to, and from the rest of the body into the grey matter. White matter is composed of fibrous axons and insulated with myelin sheathing, allowing fast communication. Grey matter is responsible for processing and retrieving information; grey matter sends out instructions and processes impulses...
7. B
8. A
