

## I. Multiple Choice Questions (MCQs)

1. What happens when a charged object is brought near a neutral object?
  - a) The neutral object becomes positively charged.
  - b) The neutral object becomes negatively charged.
  - c) The neutral object acquires an opposite charge.
  - d) Nothing happens.
2. Which of the following is responsible for lightning?
  - a) Static charge
  - b) Magnetic force
  - c) Electromagnetic waves
  - d) Gravitational force
3. Which of the following devices detects electric charges?
  - a) Thermometer
  - b) Barometer
  - c) Electroscope
  - d) Voltmeter
4. When a glass rod is rubbed with silk, it becomes:
  - a) Negatively charged
  - b) Positively charged
  - c) Neutral
  - d) Chargeless
5. In the case of lightning, which of the following is a safety measure?
  - a) Standing under a tree
  - b) Running on an open field
  - c) Staying inside a building
  - d) Touching metallic objects
6. What is the name of the process in which charges move through the atmosphere during lightning?
  - a) Conduction
  - b) Induction
  - c) Polarization
  - d) Discharge
7. Which of the following materials is used for making an electroscope?
  - a) Rubber
  - b) Glass
  - c) Metal (e.g., gold)
  - d) Paper
8. Which of the following does not cause the phenomenon of static electricity?
  - a) Rubbing a comb with dry hair
  - b) Rubbing a balloon on clothes
  - c) Turning on a light bulb
  - d) Walking on a carpet in woolen socks
9. Which type of charge is transferred from a glass rod when rubbed with a silk cloth?
  - a) Positive charge
  - b) Negative charge
  - c) No charge
  - d) Both positive and negative charge
10. The thunderstorm occurs due to:
  - a) Static charge accumulation in clouds
  - b) Air pressure differences
  - c) Wind movement
  - d) Earth's magnetic field

**II. Assertion and Reasoning -**

- a) Both Assertion and Reason are correct, and Reason is the correct explanation of Assertion.
- b) Both Assertion and Reason are correct, but Reason is not the correct explanation of Assertion.
- c) Assertion is correct, but Reason is incorrect.
- d) Both Assertion and Reason are incorrect.

1. Assertion (A): Lightning is a discharge of static electricity.

Reason (R): Thunder is the sound produced due to rapid expansion of air heated by the lightning.

2. Assertion (A): Like charges repel each other.

Reason (R): When two like charges are brought together, the force of attraction increases.

**III. Case-Based Questions****Case 1:**

During a thunderstorm, you observe that the sky suddenly becomes bright, followed by a loud sound. This happens in a few seconds. What is happening in this case?

What causes the bright flash of light?

- 1. What causes the loud sound?
- 2. Why is there a time delay between the light and sound?

**Case 2:**

You are holding a charged glass rod near a leaf electroscope. The leaves of the electroscope move apart when the rod is brought close to it.

- 1. Why do the leaves of the electroscope move apart?
- 2. What kind of charge does the glass rod have?
- 3. What happens if a negatively charged object is brought near the electroscope?