



Chapter 11: Electric Charges at Rest

1. Multiple choice questions:

- A. Whenever we bring two similarly charged body together, they will
 - a) repel b) attract c) nothing will happen
- B. Metals are good conductors because they
 - a) get charged b) allow the charge to flow through
 - c) do not allow the charge to flow d) none
- C. The method by which an uncharged object can be charged without being in contact of charged body is
 - a) rubbing b) conduction c) induction d) none of these
- D. _____ is an outcome of charges in nature.
 - a) clouds b) rain c) lightning d) snow
- E. What is the basic unit of electric charge?
 - a) ampere b) volt c) coulomb d) ohm
- F. Which material allows electric charges to flow easily through it?
 - a) insulator b) conductor c) semiconductor d) non-conductor
- G. Which of the following is a common example of an insulator?
 - a) copper wire b) aluminum foil c) plastic d) silver
- H. What is the charge of an electron?
 - a) positive b) negative c) neutral d) It varies

2. Assertion -Reason Questions:

Directions: The question below consists of an assertion and a Reason. Use the following key to choose the appropriate answer.

- (a) Both A and R are true and R is the correct explanation of A.
- (b) Both A and R are true but R is not the correct explanation of A.
- (c) A is true but R is false.
- (d) A is false but R is true.

(i) **Assertion(A):** Like charges repel each other

Reason(R): This is because electric charges of the same type exert a force that pushes them apart,
according to Coulomb's law

(ii) **Assertion(A):** Opposite charges attract each other.

Reason(R): Electric charges of different types exert a force that pulls them together, as described
by the principle of attraction in electrostatics.

(iii) **Assertion(A):** Conductors allow electric charges to flow through them easily.

Reason(R): Conductors have free electrons that can move freely, which facilitates the flow of electric charge.

(iv) **Assertion(A):** Insulators do not allow electric charges to move freely.

Reason(R): Insulators have tightly bound electrons that do not move easily, preventing the flow of electric charges through the material.

3. Define the followings:

- a)Earthing b) Electrical Induction c)Conductors d)Insulators

4. Give reasons for the following:

- We always earth the metallic body of all electrical appliances and devices we use.
- Metals do not get charged up on rubbing.
- Plastic comb gets charged on rubbing.
- Lightning may cause tall buildings and TV tower to get burnt out.
- An uncharged can be charged when brought in contact of charged object.

5. Answer the following questions:

- Write down an activity to show that like charges repel and unlike charges attract.
- Two charged up objects, if brought simultaneously near tiny pieces of paper, the combination is not able to attract, why?
- We say charges always produced in pairs, justify.
- What is earthing? Why do we need to carry on earthing of the various electrical appliances?
- Write down the steps involved in charging of an object by induction.
- Differentiate conductors from insulators on the basis of the charge they are able to acquire.
- We can say that the earth acts as source or sink for charges, justify.
- How can charge on a body be detected?
- Lightning and thunder are due to production of very large amounts of charges on the clouds, explain.
- Name the three methods used for charging an object.
- What is lightning conductor? Why is it fixed on tall buildings?
- State the precautions person should take during lightning if he is caught outside in the open.
- What helps the earth to maintain a balance in the total electric charges contained in it?
- How is lightning beneficial for us?
- If we suspend two charged rods what will happen -
 - If both the rods have similar charge
 - If both the rods have dissimilar charge

6. Case Study based question:

In a science experiment, two students, Ravi and Maya, are investigating electric charges. They use a plastic rod rubbed with a woolen cloth and a glass rod rubbed with silk cloth. They also have a balloon that they rub against their hair. They then bring the plastic rod close to the glass rod and observe the interaction. They also bring the balloon near the plastic rod and note the effects.

- What can be inferred about the type of charge on the plastic rod and the glass rod?
- What type of charge is likely present on the balloon after rubbing it against their hair?

- c) When Ravi brings the balloon near the plastic rod, what interaction would he expect to observe?
- d) How can Maya determine whether the glass rod and the plastic rod have the same or different types of charge?

Chapter : 12 Light

1. Multiple choice questions:

- i) In case of plane mirror the size of image is _____ the object.
a) same as b) smaller than c) bigger than d) none of these
- ii) When we try to see a distant object with the help of concave mirror the image is formed
a) at focus b) between P and F c) at C d) Between F and C
- iii) Which mirror is used in Ophthalmoscope?
a) convex b) concave c) plane d) None of these
- iv). When the plane mirror moves towards stationary object with a speed u than image will move with a speed _____ in same direction as that of the mirror.
a) u b) $2u$ c) $3u$ d) $4u$
- v) Which type of surface reflects light most effectively?
a) Rough surface. b) Smooth surface. c) Transparent surface. d) Opaque surface
- vi). What is formed when light reflects off a plane mirror?
a) Real image b) Virtual image c) Diffused image d) No image
- vii) What do we call the angle between the incident ray and the normal line at the point of incidence?
a) Angle of reflection b) Angle of refraction c) Angle of incidence d) Angle of dispersion
- viii) In which type of mirror does the image appear to be smaller than the object?
a) Concave mirror b) Convex mirror c) Plane mirror d) Biconvex mirror

2. Assertion- Reason Based questions:

Directions: The question below consists of an assertion and a Reason. Use the following key to choose the appropriate answer.

- (a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true but R is not the correct explanation of A.
(c) A is true but R is false.
(d) A is false but R is true.

1. Assertion(A): When light reflects off a smooth surface, the angle of incidence is equal to the angle of reflection.

Reason(R): This is because the law of reflection states that the angle of incidence equals the angle of reflection for all types of surfaces.

2. Assertion(A): A concave mirror can form both real and virtual images.

Reason(R): A concave mirror focuses parallel rays of light to a point, which allows it to form different types of images depending on the object's position relative to the focal point.

3. Assertion(A): A plane mirror always forms an image that is the same size as the object.

Reason(R): This happens because the image formed by a plane mirror is a virtual image where the image's dimensions are equal to those of the object.

4. Assertion(A): The reflection of light off a rough surface results in scattered light rays.

Reason(R): A rough surface causes light rays to reflect in multiple directions, which is why the reflected light is scattered rather than being directed in a single path.

3. Answer the following questions:

A. Define the following

- a) Reflection b) Plane reflection c) Diffused reflection
- d) Lateral inversion

B. Give reasons for the following

- a) The light is reflected when it falls on plane mirror.
- b) In the plane mirror the image of left side appears to be on right side.
- c) The ophthalmoscope is fitted with concave mirror having small hole near its centre.
- d) When we into large shining stainless spoon kept nearby our face may appear bigger or smaller than its normal size.
- e) Convex mirror is used as a rear view mirror in vehicles.

C. What is angle of incidence and angle of refraction for normal incidence?

D. Complete the given table for concave mirror

S.N	Position of Object	Nature and position of image
1	Beyond C	
2	Between F and P	
3	At C	
4	At F	

E. State the 2 laws of reflection.

F. How is the image of our face formed in plane mirror similar to that formed in convex mirror?

G. How can find the focus of a concave mirror?

H. Draw ray diagram to show the nature and position of image formed

- a) When object is placed between F and C of concave mirror
- b) Object is place beyond C of convex mirror
- c) Object is placed at distance of 5cm from a plane mirror

I. Differentiate between a real and virtual image.

J. State the uses of different mirrors in our daily life.

K. How can plane mirror help us to see full image of large object?

L. What helps us to see back of head at the hair salon?

M. How can we get multiple images using plane mirror? State the practical use of the idea of multiple images.

N. Using the plane mirror and placing a pencil in front of it draw the position of normal, incident ray and reflected ray.

O. Name the kind of mirror used in case of

- a) Looking mirror b) Kaleidoscope c) Periscope d) Rear view mirror of vehicles

4. Case study based questions:

Sophie and her friends are visiting a funhouse with a maze of mirrors. Each mirror reflects light in a different way, creating interesting optical illusions. One mirror is flat, while others are curved, either bulging outwards (convex) or inwards (concave). Sophie notices that when she stands in front of the flat mirror, she sees a clear reflection of herself. However, when she stands in front of the convex mirror, her reflection appears smaller and distorted. In contrast, when she stands in front of the concave mirror, her reflection appears larger and can sometimes look upside down.

(i) What type of mirror gives a clear reflection of Sophie's actual size?

- a) Convex Mirror b) Concave Mirror c) Flat Mirror d) None of the above

(ii) Why does Sophie's reflection look smaller in the convex mirror?

- a) The convex mirror diverges light rays, making objects appear smaller.
b) The convex mirror converges light rays, making objects appear larger.
c) The concave mirror diverges light rays, making objects appear smaller.
d) The flat mirror converges light rays, making objects appear larger.

(iii) When Sophie looks in the concave mirror, why does her reflection sometimes look upside down?

- a) The concave mirror reflects light rays directly back to the viewer.
b) The concave mirror converges light rays to a point, and if the object is far from the mirror, the image can appear inverted.
c) The convex mirror converges light rays, causing the image to be upside down.
d) The flat mirror does not cause any image inversion.

Chemistry

Chapter- Acids, bases and Salts

Multiple-Choice Questions:

- Which of the following is a base?
a) Curd b) Vinegar c) Amla d) Window cleaner
- Which of the following is not an indicator that occurs naturally?
a) Gudhal b) Turmeric c) Litmus d) Phenolphthalein
- Which one of the following fruits contains ascorbic acid?
a) Spinach b) Grapes c) Unripe mangoes d) Amla
- Which of the following indicators are typically found as strips?
a) China Rose b) Turmeric c) Litmus d) All of the above
- Which of the following reactions represents neutralization?
a) Acid + Base \rightarrow Salt + Water

- b) Acid + Metal \rightarrow Salt + Hydrogen
 c) Base + Metal \rightarrow Salt + Hydrogen
 d) Salt + Water \rightarrow Acid + Base
- What gas is produced when an acid reacts with a metal?
 a) Oxygen b) Carbon dioxide c) Hydrogen d) Nitrogen
 - Which substance is commonly used to neutralize acidic soil?
 a) Baking soda b) Lime (calcium oxide) c) Vinegar d) Salt
 - What is the main component of vinegar?
 a) Hydrochloric acid b) Sulfuric acid c) Acetic acid d) Citric acid
 - Which of the following is a salt?
 a) Sodium chloride b) Potassium hydroxide c) Hydrochloric acid d) Magnesium
 - What color does blue litmus paper turn when dipped in an acid?
 a) Blue b) Green c) Red d) Yellow

Assertion and Reason Based Questions:

- Both A and R are true, and R is the correct explanation of A.
 - Both A and R are true, but R is not the correct explanation of A.
 - A is true, but R is false.
 - A is false, but R is true.
- Assertion (A):** To protect tooth decay, we should brush our teeth regularly.
Reason (R): The acidic ingredient in the paste protects tooth from decay.
 - Assertion (A):** Bases feel slippery to the touch.
Reason (R): Bases contain hydroxide ions that react with oils on the skin to form soap-like substances.
 - Assertion (A):** All salts are neutral in nature.
Reason (R): Salts are formed from the neutralization reaction of an acid and a base.
 - Assertion (A):** Salt may be acidic, basic or neutral in nature.
Reason (R): Lime juice is of acidic nature because it contains citric acid.
 - Assertion (A):** Onion is an example of olfactory indicator.
Reason (R): Litmus is a natural dye and is extracted from lichens.

Short Answer Questions:

- What is an indicator, and name two natural indicators used to identify acids and bases?
- Define a neutralization reaction and give an example.
- What is the difference between a strong acid and a weak acid?
- What is the role of pH in everyday life?
- How can you test if a substance is an acid or a base using red and blue litmus paper?

Long Answer Questions:

- Explain the pH scale and its significance.
- Describe the process and importance of neutralization in everyday life.
- How are acids and bases used in industry? Provide examples.
- Discuss the environmental impact of acid rain and measures to control it.
- Write the chemical formula of 4 mineral acids and 4 organic acids. Also mention their name.

Case Study Based Questions:

Case Study1: A farmer has noticed that his crops are not growing well and suspects the soil may be too acidic. He decides to test the soil's pH and finds it to be 5.0.

1. What steps can the farmer take to neutralize the acidic soil, and how will these steps help?
2. How can the farmer continuously monitor and manage the soil pH to ensure optimal crop growth?

Case Study2: Priya's father was suffering from severe stomach pain. He was showing symptoms of heartburn and indigestion. He consulted a doctor who told him that he was suffering from acidity and advised him to take an antacid tablet after each meal. Priya's father followed the advice strictly and was cured.

Q.1. Which acid is produced in our stomach?

- (a) Sulphuric acid (b) Hydrochloric acid (c) Nitric acid (d) Phosphoric acid

Q.2. Antacids contain:

- (a) acid (b) base (c) salt (d) both (a) and (b)

Q.3. Milk of magnesia is an antacid which contains:

- (a) magnesium chloride (b) magnesium phosphate
(c) magnesium hydroxide (d) magnesium nitrate

Q.4. Explain how an antacid tablet gave relief to Priya's father.

Q.5. Is a glass of lemon water gives relief in indigestion? Why?

Biology

Chapter- Weather, Climate and Adaptation

Multiple choice questions:

1. Which of the following is the climate found in Kerala?
(a) Very hot and wet (b) Wet (c) Hot and dry (d) Moderately hot and moderately dry
2. Maximum temperature of the day occurs generally
(a) in the afternoon (b) when the sun rises (c) when the sun set (d) in the evening
3. Nights in deserts are much cooler because
(a) humidity becomes high (b) sand cools down faster
(c) wind blows vigorously (d) it rains at night
4. Penguins are adapted to live in
(a) desert climate (b) equatorial region (c) polar region (d) rainforests.

Assertion and Reason Based Questions:

Directions: The question below consists of an assertion and a Reason. Use the following key to choose the appropriate answer.

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5. **Assertion (A):** The tropical rain forests support a variety of plants and animals.

Reason (R): The climate of tropical regions is hot and wet.

6. **Assertion (A):** Polar bear has a strong sense of smell so that it can catch its prey for food.

Reason (R): Penguins are huddled together to keep warm.

7. **Assertion (A):** Elephant is a well known animal of Indian tropical rainforests.

Reason (R): Large ears of elephant help it to hear even very soft sounds.

8. **Assertion (A):** Tropical rain forests are found in Western Ghats and Assam in India.

Reason (R): We find huge populations of plants and animals in tropical rainforests.

6. **Answer the following questions:**

- i. _____ and _____ that help animals to adapt to their surroundings are a result of the process of evolution.
- ii. Name the two regions of the earth which have severe climatic conditions.
- iii. Where are polar region situated? Name some countries that belong to polar region.
- iv. Name some animals found in polar region.
- v. How is the climate of polar region different from tropical region?
- vi. Why do the birds in cold climate migrate to warmer regions in winters?
- vii. What is adaptation?
- viii. How animals are adapted in the Polar Regions?
- ix. How animals are adapted to a hot and humid climate of tropical rainforest since the number is large?
- x. Write some of the adaptations of animals found in tropical rainforest.
- xi. How weather is a complex phenomenon?
- xii. How do elephant living in the tropical rainforest adapt itself?
- xiii. How tropical rainforest supports wide variety of plants and animals?
- xiv. The daily _____ report carries information about the temperature, humidity and rainfall during the past 24 hours
- xv. Rainfall is measured by an instrument called the _____.
- xvi. Define weather.
- xvii. Who prepares weather reports?
- xviii. What are elements of weather?
- xix. How sun causes changes in the weather?
- xx. What is the use of maximum and minimum thermometer?
- xxi. Define climate.
- xxii. How mean temperature is calculated?
- xxiii. What is the climate of typical desert?
- xxiv. How climate of Jammu and Kashmir different from Kerala?
- xxv. Why weather changes so frequently?
- xxvi. Differentiate between weather and climate.
- xxvii. What makes you call a climate hot? Give example.

xxviii. Why it is difficult to predict the weather of a place while it is easy to predict its climate?

7. Case Study Based questions:

All changes in the weather are caused by the sun. The sun is a huge sphere of hot gases at a very high temperature. The distance of the sun from us is very large. Even then the energy sent out by the sun is so huge that it is the source of all heat and light on the earth. So, the sun is the primary source of energy that causes changes in the weather. Energy absorbed and reflected by the earth's surface, oceans and the atmosphere play important roles in determining the weather at any place. If you live near the sea, you would have realized that the weather at your place is different from that of a place in a desert, or near a mountain. The weather reports are prepared by the Meteorological Department of the Government. This department collects data on temperature, wind, etc., and makes the weather prediction.

Que. 1) Changes in weather are caused by sun and the sun is a fireball of hot gases is it true or false.

Que. 2) The distance between sun and earth is.....as compared to the distance between earth and moon.

(a) Short (b) Large (c) Maximum (d) Minimum

Que. 3) What is sun?

Que. 4) What determines the weather of any place?

Chapter- Fabric from Fibers

Multiple choice questions:

1. Which one of the following is not a breed of sheep?

(a) Murrah (b) Marwari (c) Lohi (d) Nali

2. What is the scientific name of mulberry tree?

(a) Magnifera indica (b) Morus alba (c) Desmodium girence (d) None of these

3. Silk is derived from

(a) cocoon (b) pupa (c) egg (d) moth

4. Selective breeding is a process of

(a) selecting the offspring with desired properties.
(b) selecting the parents with desired properties.
(c) selecting an area for breeding.
(d) selecting fine hair for good quality wool.

5. Paheli wanted to buy a gift made of animal fibre obtained without killing the animal.

Which of the following would be the right gift for her to buy?

(a) Woollen shawl (b) Silk scarf (c) Animal fur cap (d) Leather jacket.

Directions: The question below consists of an assertion and a Reason. Use the following key to choose the appropriate answer.

(a) Both A and R are true and R is the correct explanation of A.

(b) Both A and R are true but R is not the correct explanation of A.

- (c) A is true but R is false.
(d) A is false but R is true.
6. **Assertion (A)** : Silk is comfortable to be worn in warm weather.
Reason (R) : Silk is a bad conductor of heat.
7. **Assertion (A)** : Scouring is the process of washing sheared fleece in hot water, detergent and alkali in tank.
Reason (R) : Scouring removes dirt, grass and grease.
8. **Assertion (A)** : Silkworms are usually killed with heat before it reaches the moth stage.
Reason (R) : The emergence of silk moth from cocoons damage the continuity of the thread of the cocoon.
9. **Assertion (A)** : Wool is a natural fibre
Reason (R) : Wool is obtained from animals like sheep, llama and goats.

Answer the following questions:

- i. What do you mean by selective breeding?
- ii. Why is the silk fibre of mulberry silk moth preferred?
- iii. Paheli went to the market to buy saris for her mother. She took out a thread from the edge of the two saris shown by the shopkeeper and burnt them. One thread burnt with a smell of burning hair and the other burnt with the smell of burning paper. Which thread is from a pure cotton sari and which one from a pure silk sari? Give reason for your answer.
- iv. Paheli wanted to buy a gift made of animal fibre obtained without killing the animal. Which of the following would be the right gift for her to buy- woolen shawl or silk scarf or leather belt?
- v. In ancient times stitching was not known. People used to simply drape the fabrics around different parts of their body. Even today a number of unstitched fabrics are used by both men and women. Can you give four such examples of clothes?
- vi. Some terms related to fabrics are jumbled up and given below. Write them in their correct form.
(a) Onttoc (b) Sinnping (c) Vingwea (d) Bisref
- vii. What is natural fibre? Explain the different types of natural fibre
- viii. What do you mean by the following terms? a) Shearing b) Sorting
- ix. Why do some animals have thick coats of hair on their body?
- x. From what type of health problems the workers suffer while working in a wool industry?
- xi. How can you distinguish between natural silk and artificial silk?
- xii. How the silk fibres are obtained from silk moth?

Case study Based questions:

Silk moth is a large white insect. Egg is the first stage of a silkworm's life cycle. The female moth lays its eggs during summer. The eggs hatch into larvae, which feed on tender mulberry leaves. This stage lasts for about 27 days and during this time the larvae shed their skin four times. The process of shedding the skin is called moulting. The larvae spin fine silk filament around it to form a cocoon and attains the pupal stage. The pupa

changes into the moth which comes out of the cocoon and the cycle continues.

1. What is the first stage of a silkworm's life cycle?

- i) Insect ii) Egg iii) Worm iv) Moth

2. What do the eggs hatch into?

- i) Pupa ii) Moth iii) Larvae iv) All of the above

3. Name the process of shedding the skin.

- i) Moulting ii) Shredding iii) Shearing iv) Scouring

4. Name the food eaten by the larvae of silk worm.

- i) Grass ii) Mulberry leaves iii) Mulberry fruit iv) None of the above