

SSC Science 1 – 2026**1 Gravitation**

Q1. State Newton's Universal Law of Gravitation.

Answer:

Every object in the universe attracts every other object with a force directly proportional to the product of their masses and inversely proportional to the square of the distance between them.

$$F = G \frac{m_1 m_2}{r^2}$$

Where

- F = gravitational force
- G = gravitational constant
- m_1 and m_2 = masses
- r = distance between them



Q2. Define acceleration due to gravity (g).

Answer:

Acceleration produced in a body due to Earth's gravitational force is called acceleration due to gravity (g).

Value on Earth $\approx 9.8 \text{ m/s}^2$

2 Periodic Classification of Elements

Q1. State the Modern Periodic Law.

Answer:

The physical and chemical properties of elements are periodic functions of their atomic numbers.

Q2. What are Dobereiner's Triads?

Answer:

Groups of three elements having similar chemical properties where the atomic mass of the middle element is approximately the average of the other two.

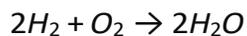
Example:

Lithium – Sodium – Potassium.

3 Chemical Reactions and Equations

Q1. Write the types of chemical reactions with examples. Answer:

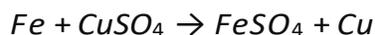
1. Combination reaction



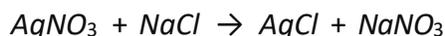
2. Decomposition reaction



3. Displacement reaction



4. Double displacement reaction

**Q2. What is corrosion? Give example.**

Answer:

Slow destruction of metals due to reaction with air and moisture.

Example:

Rusting of iron.

4 Effects of Electric Current

Q1. State the heating effect of electric current.

Answer:

When electric current passes through a conductor, heat energy is produced due to resistance.

Formula:

$$H = I^2Rt$$

Where

I = current

R = resistance t

= time

Q2. What is an electric motor?

Answer:

An electric motor is a device that converts electrical energy into mechanical energy using magnetic force.

Principle: Interaction between magnetic field and electric current.

Heat

Q1. Define specific heat capacity.

Answer:

The heat required to raise the temperature of 1 kg of a substance by 1°C. Unit:

J/kg°C

Q2. What is latent heat?

Answer:

Heat absorbed or released during change of state without change in temperature.

Example:

Ice melting into water.

6 Refraction of Light

Q1. State the laws of refraction. Answer:

1. The incident ray, refracted ray, and normal lie in the same plane.
2. Ratio of sine of angle of incidence to sine of angle of refraction is constant.

$$\frac{\sin i}{\sin r} = \text{constant}$$

Q2. Define refractive index.

Answer:

$$n = \frac{\sin i}{\sin r}$$

It indicates how much light bends when entering a medium.

7 Lenses

Q1. Write differences between convex and concave lens.

Q2. What is power of a lens?

Answer:

$$P = -\frac{1}{f}$$

Where

P = power in dioptre

f = focal length in meters.

1 Human Eye – Neat Labelled Diagram and Working

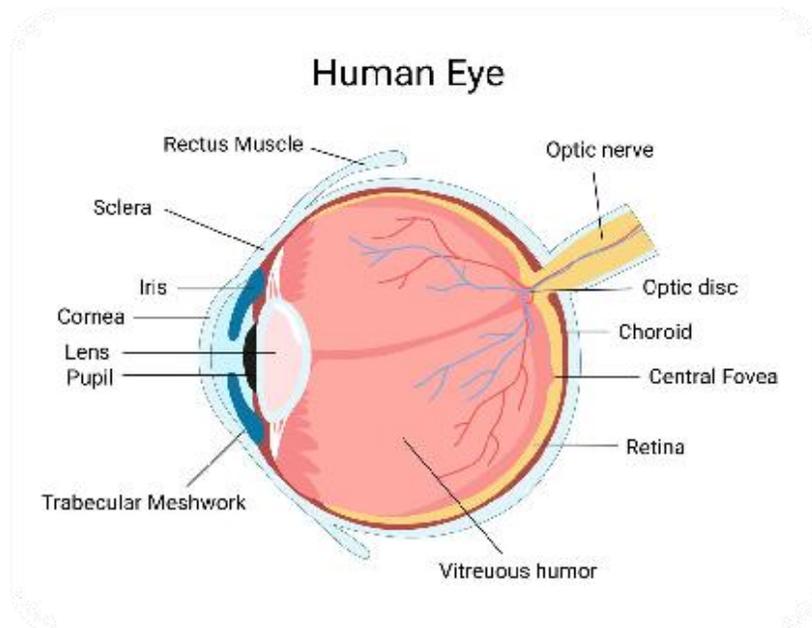


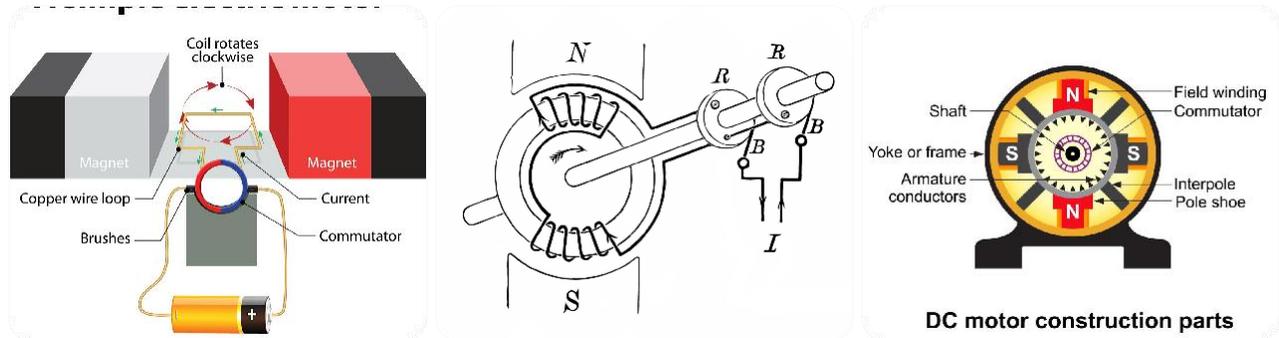
Diagram Labels

- Cornea
- Iris
- Pupil
- Lens
- Retina
- Optic nerve

Working of Human Eye

1. Light from objects enters the eye through the cornea.
2. The iris controls the size of the pupil and regulates the amount of light entering the eye.
3. Light passes through the pupil and reaches the convex lens.
4. The lens focuses the light rays on the retina forming a real, inverted image.
5. The optic nerve sends signals from the retina to the brain.
6. The brain interprets these signals and we are able to see the object.

2 Electric Motor – Working with Diagram



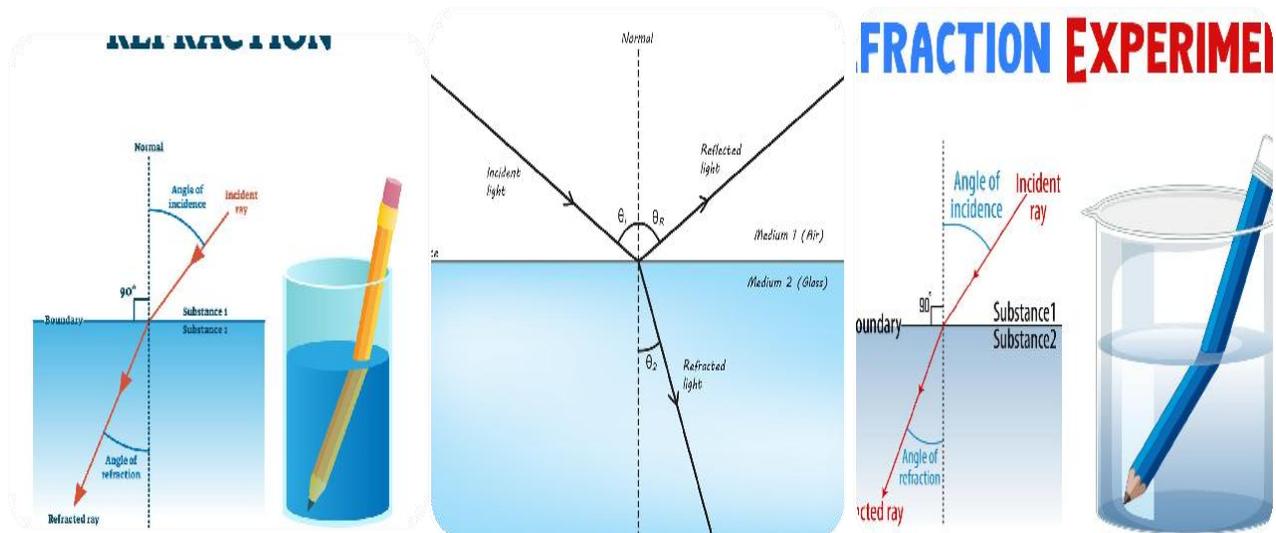
Principle

An electric motor works on the principle that a current carrying conductor placed in a magnetic field experiences a force.

Working

1. A rectangular coil (armature) is placed between the north and south poles of a magnet.
2. When electric current flows through the coil, a magnetic field is produced.
3. Due to interaction between the magnetic field and current, a force acts on the coil.
4. This force causes the coil to rotate.
5. The split ring commutator reverses the current direction, allowing continuous rotation.
6. Thus electrical energy is converted into mechanical energy.

3] Laws of Refraction (Snell's Law)



First Law

The incident ray, refracted ray and the normal at the point of incidence lie in the same plane.

Second Law (Snell's Law)

The ratio of sine of angle of incidence to sine of angle of refraction is constant.

$$\frac{\sin i}{\sin r} = \text{constant}$$

This constant is called the refractive index of the medium.

$$n = \frac{\sin i}{\sin r}$$

Explanation

When light travels from one medium to another (e.g., air to glass), its speed changes, causing the ray to bend. This bending is called refraction.

4] Periodic Trends in Modern Periodic Table

Modern Periodic Law

The physical and chemical properties of elements are periodic functions of their atomic numbers.

Important Periodic Trends

1. Atomic Size decreases across a period, Increases down a group.

2. Metallic Character

- Decreases across a period •
Increases down a group

3. Non-metallic Character •

- Increases across a period •
Decreases down a group

4. Valency

- Increases from 1 to 4, then decreases from 4 to 0 across a period.

Example

Sodium (Na) → Magnesium (Mg) → Aluminium (Al) → Silicon (Si)

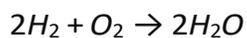
Atomic size decreases from Na → Si.

5] Types of Chemical Reactions (with Examples)

1. Combination Reaction

Two or more substances combine to form a single product.

Example:



2. Decomposition Reaction

A compound breaks down into simpler substances.

Example:



3. Displacement Reaction

A more reactive element displaces a less reactive element.

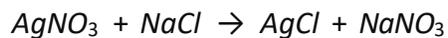
Example:



4. Double Displacement Reaction

Two compounds exchange ions.

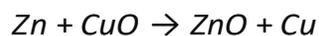
Example:



5. Redox Reaction

Reaction in which oxidation and reduction occur simultaneously.

Example:



Section A (1 Mark Each)

Q1. Choose the correct option.

- 1.** The SI unit of electric current is
 - a) Volt
 - b) Ampere
 - c) Ohm
 - d) Watt
 - 2.** The image formed by a concave lens is always
 - a) Real
 - b) Virtual
 - c) Inverted
 - d) Magnified
 - 3.** Atomic number represents
 - a) Number of neutrons
 - b) Number of electrons
 - c) Number of protons
 - d) Number of atoms
 - 4.** The device used to convert electrical energy into mechanical energy is
 - a) Generator
 - b) Electric motor
 - c) Transformer
 - d) Battery
-

Q2. Fill in the blanks

1. The force of attraction between two masses is called _____.
 2. Rusting of iron is an example of _____ reaction.
 3. The bending of light when it passes from one medium to another is called _____.
 4. The SI unit of heat energy is _____.
-

Q3. Match the following

Column A

Column B

Convex lens

Converging lens

Electric motor

Mechanical energy

Sodium

Highly reactive metal

Refraction

Bending of light

Section B (2 Marks Each)

Q4. Answer the following

1. Define acceleration due to gravity.
 2. State modern periodic law.
 3. Define specific heat capacity.
 4. What is latent heat?
-

Section C (3 Marks Each)

Q5. Answer the following

1. Write any three differences between convex and concave lenses.
 2. Write balanced equation for corrosion of iron.
 3. Give scientific reason: Aluminum is used in electric transmission wires.
-

Section D (5 Marks Each)

Q6. Answer any two

1. Explain working of electric motor with diagram.
 2. Draw neat labelled diagram of human eye and explain its working.
 3. State laws of refraction and explain with diagram.
-

Section E (5 Marks)

Q7. Answer the following

Explain periodic trends in modern periodic table with examples.
