1. Define electric current and state its SI unit.

1b. State Ohm’s law

1. A current of 4 A flows through a wire for 2 minutes. Calculate the total charge that passes through the wire.

2b. Derive the formula for resistance in terms of resistivity, length, and cross-sectional area.

1. State the following;
2. Boyles law
3. Charles law
4. Graham's law of diffusion

4. Explain the Concept of a body under the influence of gravitational field.

4b. An electric motor operates at 1200 W for 5 minutes. How much energy does it consume?

5. Hydrogen sulfide (H₂S) diffuses at 0.8 times the rate of nitrogen (N₂). Find the molar mass of hydrogen sulfide. (Molar mass of N₂ = 28 g/mol.)

5b. A sample of gas has an initial volume of 500 cm³ at a pressure of 1.2 atm. What is the new pressure if the volume decreases to 300 cm³?

6. A gas has an initial volume of 800 cm³ at -23°C. What will be its new volume at 127°C?

6b. A lamp has a resistance of 60 Ω and is connected to a 240 V mains supply. Calculate the current flowing through it and the power consumed.