

End Semester /Reappear (Semester II) Examination May 2025

Programme: Diploma (CSE & MiE)
Course: Basic Physics-II
Course Code: 3DBSC104 & 8DBSC104
Enrolment no. _____

Full Marks: 70
Time: 3 Hrs.

Section I

1. Short Answer type questions. Answer any four.

4 x 5 = 20

- State & Explain Newton's Law of Gravitation in details. Formulate the relation between G (Gravitational Constant) and g (acceleration due to gravity).
- Define viscosity and derive expression for coefficient of viscosity.
- Define equipotential surface and what are the properties of an equipotential surface?
- Explain Photo-electric effect and write down its applications.
- What do you mean by normal and shearing stress?
- What do you mean by reflection of light? Discuss the laws of reflection in details.

Section II

Long Answer type questions. Answer any three.

3 x 10 = 30

- Calculate the force of attraction between the objects of mass 50 kg and the Earth (mass of Earth = 6×10^{24} kg) and its distance is 64×10^5 m.
- What do you mean by Bulk modulus and Rigidity modulus? What mass should be used to a steel wire of 4 m long and 2 mm in a diameter to stretch it upto 1 mm? The Young's modulus of steel is 2×10^{12} dyne cm^{-2} and $g = 981 \text{ cm s}^{-2}$.
- Discuss the importance of Gauss Law and derive an expression for Electric field at a point lies outside the charged sphere.
- Describe and explain Davisson and Germer experiment with neat & clean diagrams, Observations and results.
- Show that acceleration due to gravity does not depend on the mass of a body.

Section III

Application based questions. Answer any one.

1 x 20 = 20

- State and explain Hooke's Law. Discuss the stress strain diagram. Discuss some phenomena associated with elastic behavior of solids.
- Discuss the origin of Magnetization. What do you mean by Hysteresis curve and explain the process of formation along with its properties?
- Explain the phenomenon of Dispersion of light. Calculate de-Broglie wavelength Associated with a proton moving with a velocity equal to 1/20th of the velocity of light. (Mass of the Proton = 1.67×10^{-27} kg).
