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End Semester Examination, December 2024

B.Sc. (H) FS – Ist Semester

Elements of Physics (SCFS109)

Time: 2.5 hrs.

Max Marks: **50**

Note: *All Questions are compulsory. Marks are indicated against each question.*

PART-A

Q.1

- (a) Name two experiments which prove wave nature of light. [CO-1] [L-1] **2**
(b) Define De Broglie wavelength. [CO-1] [L-1] **2**
(c) Give the relation between frequency, wavelength and speed of light. [CO-1][L-1] **2**
(d) What is the difference between transverse wave and longitudinal wave? [CO-1] [L-1] **2**
(e) Give differences between light waves and matter waves. [CO-1] [L-1] **2**
(f) Is photocurrent dependent on intensity? Justify your answer. [CO-1] [L-1] **2**
(g) Define work function. [CO-1][L-1] **2**
2x5

PART-B

- Q.2 Apply postulates of Bohr atomic model to explain atomic structure. [CO-3] [L-3] **10**
Also explain Pauli Exclusion principle.

OR

By using the knowledge of quantum numbers, explain atomic structure. [CO-3] [L-3] **10**

- Q.3 What is the photoelectric effect? How intensity and work function affect the photocurrent? [CO-1] [L-1] **10**

OR

Find the expression for Compton shift using suitable diagram. [CO-1] [L-1] **10**

- Q.4 Explain how Newton's first law can be deduced from Newton's second law. [CO-2] [L-2] **10**
Give differences between balanced and unbalanced forces.

OR

Discuss laws of conservation of momentum and energy. Give real life examples to explain property of inertia. [CO- 2] [L-2] **10**

- Q.5 What is radioactivity? Compare Natural and artificial radioactivity? Explain the laws of radioactivity decay.

OR

Discuss the work done by Gravitational Force and Spring Force

[CO- 2] [L-2] **10**