April 2025
B.A./B.Sc.
Second Semester
MULTI-DISCIPLINARY COURSE – 2
PHYSICS
Course Code: PHO 2.11
(General Physics - II)

Total Mark: 50   *Pass Mark: 20*
Time: 2 hours

I. Answer the following questions.

1.   (a) Define alternating current and give one example of its practical use.   2
    (b) State and explain Coulomb's law.   3
    (c) A light bulb in a circuit has a resistance of 10 Ω and is connected to a 20 V battery. How much current flows through the bulb?   3
    (d) Sketch and explain electric field lines for a positive and a negative charge.   4

2.   (a) Define refraction of light and state Snell's law.   2
    (b) Arrange the following electromagnetic waves in increasing order of frequency: X-rays, radio waves, infrared, ultraviolet.   3
    (c) Explain the terms involved in thin lens formula.   3
    (d) Write the mirror formula and explain the sign conventions used in it.   4

3.   (a) What are energy bands in solids?   2
    (b) Differentiate between nuclear fission and nuclear fusion.   3
    (c) Define nuclear force and state two of its properties.   3
    (d) Explain Bohr's postulates for the hydrogen atom.   4

II. Answer <u>any two</u> of the following questions.

4.   (a) Define electric potential and potential difference.   2
    (b) Distinguish between a simple microscope and a compound microscope.   2

(c) State Einstein's photoelectric equation and explain the terms involved. 3

5. (a) What is a p-n junction? 2
(b) State Faraday's laws of electromagnetic induction. 2
(c) A TV remote works using infrared radiation. Explain why infrared is suitable for this purpose. 3

6. (a) What are convex and concave lenses? Give one use of each. 2
(b) What is meant by the dual nature of radiation? 2
(c) Distinguish between conductors, insulators, and superconductors with examples. 3

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