Department of Applied Sciences & Humanities

INTERNAL ASSESMENT (IA) - I

Date: 25.10.2024

Max. Marks: 15
Class: FE SEM-I
Name of the Course: Applied Physics (BCS102)
Branch: All

Instructions:
1. Question 1 (I & ii) is compulsory for 6 Marks
2. From Question 2 (Solve any one)
3. From Question 3 (Solve any one)
4. Figures to the right of the question indicate full marks.
5. Assume the suitable data wherever necessary.
6. Illustrate your answers using neat diagrams wherever necessary.

Duration: 45 minutes

Questions	Max. Marks	Bloom's Taxonomy Level	Course Outcomes
Q1. i. Distinguish between spontaneous & stimulated emission of radiation?	3	2	CO1
Q1. ii. What is fiber optics communication? Explain the principle of TIR used in fiber optics communication?	3	1	CO2
Q2. a Draw the labeled diagram of He-Ne laser with energy level diagram? Comment on its efficiency? What is the role of 'He' ions? Give its applications?	5	2	CO1
OR			
Q2. b What is numerical aperture and acceptance angle of optical fiber? Derive its expression for step index optical fiber?	5	3	CO2
Q3. a What is antireflection film? Derive amplitude and phase condition? Give its applications	4	3	CO3
OR			
Q3. b. A step index optical fiber has core diameter 29 micro meter and refractive indices of core and cladding are 1.52 & 1.5189 respectively. If the light of wavelength 1.3 micrometer is guided through the fiber, determine the number of modes the fiber will support?	4	2	CO2