Vidyavardhini's College of Engineering and Technology, Vasai

First Year Engineering

Internal Assessment Test-I (IAT-I)

Subject: Applied Physics **NEP-2020** **Sem: I**

Max. Marks / Duration: 15 / 1 Hr **Date: 27/10/24**

Note: All Questions are compulsory.

Figures to the right indicates full marks.

Q. No.	Questions	IAT of Marks (15)	BL	CO
Q1	**Each question of two marks (solve any three)**	**6**		
1(a)	Derive the expression for angle of acceptance in optical fibre.	2	2	2
1(b)	Differentiate between Step Index and Graded Index Optical Fibre	2	2	
1(c)	Determine the angle of acceptance and numerical aperture, if the fiber has a core refractive index of 1.50 and a cladding refractive index of 1.41.	2	3	
1(d)	Determine the refractive indices of the core and cladding material of a fiber if the numerical aperture is 0.22 and the Fractional R.I change is 0.012.	2	3	
Q2	**Solve any one**	**4**		
(a)	Derive an expression for the optical path difference in a thin film of uniform thickness. **OR**	4	3	3
(b)	Derive the expression for the fringe width in wedge-shaped thin film.			
Q3	**Solve any one**	**5**		
(a)	Illustrate the construction and working of He-Ne laser with energy level diagram. **OR**	5	2	1
(b)	Illustrate the use of laser in Barcode Reader and Metal-work.			

BL -Bloom's Taxonomy Levels (1- Remembering, 2- Understanding, 3- Applying, 4 - Analyzing , 5-Evaluating, 6-Creating)

CO - Course Outcomes

CO1: Illustrate the use of laser in LiDAR and Barcode reading.
CO2: Apply the foundation of fiber optics in the development of modern communication technology.
CO3: Determine the wavelength of light and refractive index of liquid using the interference phenomenon.