(Common to CE, ME, MCT, MMT, AE, PTM, CEE, MSNT)

Time: 3 hours

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART-A

		(23 Ivial KS)
1.a)	Why do we get dark ring at the center of the Newton's rings.	[2]
b)	What is the difference between interference and diffraction?	[3]
c)	Define plane polarized light.	[2]
d)	What are the characteristics of laser radiation?	[3]
e)	Write the condition for total internal reflection.	[2]
f)	Why do you prefer step index single mode fiber?	[3]
g)	Define coordination number	[2]
h)	What are miller indices?	[3]
i)	State Bragg's law of X-ray diffraction.	[2]
j)	Write the difference between Frenkel and Schottky defects.	[3]

PART-B

(50 Marks)

(25 Marks)

2.a) b)	Explain Newton's experiment to obtain wavelength of monochromatic light. When the two light sources said to be coherent.	[5+5]
	OR	
3.	Discuss single slit diffraction and obtain an expression for it.	[10]
4.a)	Explain production and detection of elliptically and circularly polarized lig quarter wave plate.	ht using
b)	What is Malus's law?	[5+5]
	OR	
5.a)	Describe the construction and working of He-Ne laser and write its applications.	
b)	Define population inversion.	[5+5]
6.a)	Classify different types of optical fibers and write its applications.	
b)	Derive an expression for acceptance angle and numerical aperture.	[5+5]
7 a)	Explain any two fiber optic sensors and write its applications	
b)	Write the construction of optical fiber.	[5+5]

Code No: 131AC JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD B.Tech I Year I Semester Examinations, December – 2019/January - 2020 **ENGINEERING PHYSICS**

Max. Marks: 75

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- 8.a) Define space lattice, unit cell and lattice parameters.
 - b) Write the seven crystal systems with their a, b, c values and their angles. [5+5]

OR

- 9.a) Write coordination number and packing fraction values for SC, BCC, FCC and HCP.
 - b) Discuss the inter planar spacing of orthogonal crystal system. [5+5]
- 10. Discuss the Debye-Scheres method and explain how d-values are determine using this method. [10]

OR

- 11.a) Mention different kinds of crystal imperfections.
 - b) Define Edge and Screw dislocation and write their differences. [5+5]

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