I B. Tech II Semester Supplementary Examinations, July/August-2021 ENGINEERING PHYSICS

R16

(Com. to CE, ME, CHEM, AE, BIO, AME, MM, PE, PCE, MET)

Time: 3 hours

Max. Marks: 70

SET - 1

Note: 1. Question Paper consists of two parts (Part-A and Part-B)
2. Answering the question in Part-A is Compulsory
3. Answer any FOUR Questions from Part-B

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PART -A

1.	a)	What are the conditions for clear vision of interference fringes?	(2M)
	b)	Distinguish between interference and diffraction	(2M)
	c)	Explain Brewster's law.	(2M)
	d)	What is Population inversion?	(2M)
	e)	State and explain Bragg's law of X-ray diffraction.	(2M)
	f)	What is the principle of pulse echo testing?	(2M)
	g)	Define magnetic susceptibility and permeability.	(2M)
PART -B			
2.	a)	Explain the formation of colors due to interference in a thin film when exposed to sun light.	(4M)
	b)	Discuss the phenomena of interference of light due to thin films and find the conditions of maxima and minima.	(10M)
3.	a)	State and explain Rayleigh's criterion for resolution.	(5M)
	b)	Derive the expression for Resolving power of Grating.	(9M)
4.	a)	Write notes on Pumping, Population inversion and lasing action.	(6M)
	b)	With neat diagram, describe the construction and working of Ruby laser.	(8M)
5.	a)	What are Miller Indices? How are they obtained?	(6M)
	b)	Derive expression for interplanar spacing between two adjacent planes of Miller indices (h,k,l) and lattice constant á'.	(8M)
6.	a)	Explain the various factors affecting the acoustics of building and give their remedies.	(10M)
	b)	A picture hall has a volume of 8000 m3. It is required to have reverberation time of 1.5 s. What should be the total absorption in the hall?	(4M)
7.	a)	Explain electronic polarizability in atoms and obtain an expression for electronic polarizability in terms of radius of the atoms.	(10M)
	b)	Find the relative Permeability of a ferromagnetic material if field of strength 220amp/metre produces a magnetisation 3300 amp/metre in it.	(4M)

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