Code No:**21BS1103** **RM21** **SET - 2**

I B.Tech - I Semester Supply Examinations, October -2022

ENGINEERING PHYSICS

(Com. to ECE Branch Only)

Time : 3 Hours Max.Marks:70

Answer any five Questions one Question from Each Unit
All Questions Carry Equal Marks

UNIT -I

1	A)	With necessary theory and diagram derive the condition for maxima and minima in interference in thin film (Reflected light).	7M
	B)	If a parallel glass plate of t=4×10^{-4}mm and RI=1.5 is illuminated normally by white light, what wavelengths will be intensified in reflected beam in visible spectrum?	7M

OR

2	A)	What is Nicol Prism? Explain construction and working of Nicol Prism.	7M
	B)	Write difference between polarized and unpolarized light.	7M

UNIT -II

3	A)	Explain the terms (a) Stimulated emission (b) Spontaneous emission (c) Population inversion (d) Metastable state (e) Pumping (f) Optical pumping (g) Life time.	7M
	B)	Classify the fibers on the basis of refractive index profile and also on the basis of mode of propagation.	7M

OR

4	A)	With a neat diagram discuss construction, working and uses of Ruby Laser.	6M
	B)	Distinguish between single mode and multimode fiber with suitable diagram.	4M
	C)	What are the important applications of laser.	4M

UNIT -III

5	A)	Explain about hysteresis in a magnetic material	7M
	B)	What is electronic polarization? Derive an expression for electronic polarizability.	7M

OR

6	A)	Differentiate between soft and hard magnetic materials	6M
	B)	Discuss about different polarization process with their Mechanism	4M
	C)	The dielectric constant of He gas at NTP is 1.0000684. Calculate the electronic polarizability of He atoms if the gas contains 2.7 x 10^{25} atoms/m^3.	4M

UNIT -IV

7	A)	Describe the production of ultrasonic wave by magnetostriction method	7M
	B)	Explain the various factor affecting architectural acoustics and their remedies.	7M

OR

8	A)	Derive the expression for Sabine's formula?	7M
	B)	What are basic requirements of acoustically good hall?	7M

UNIT -V

9	A)	Explain the powder method of crystal structure analysis.	7M
	B)	Obtain the expression for coordination number and atomic radius for SC, BCC and FCC lattices.	7M

OR

10	A)	Define the terms (a) basis (b) space lattice (c) unit cell (d) primitive cell (e) coordination number (f) packing factor (g) atomic radius.	7M
	B)	What is Bragg's law? Derive Bragg's law of X-ray diffraction.	7M