

Subject Code: R13103/R13

Set No - 1

I B. Tech I Semester Supplementary Examinations May/June - 2016

ENGINEERING PHYSICS

(Common to ECE, EEE, EIE, BioTech, EComE, Agri.E)

Time: 3 hours

Max. Marks: 70

Question Paper Consists of **Part-A** and **Part-B**
Answering the question in **Part-A** is Compulsory,
Three Questions should be answered from **Part-B**

PART-A

1. (a) Distinguish between a polarized light and an unpolarized light.
- (b) State Bragg's law for X-ray diffraction. What is its limiting condition?
- (c) What are polar and non-polar dielectrics?
- (d) Define magnetization and show that $B = \mu_0(H+M)$.
- (e) What are matter waves and list out their properties?
- (f) Describe the principle behind working of a photoconductor.

[4+4+4+4+3+3]

PART-B

2. (a) Describe and explain the formation of Newton's rings in reflected light. Deduce expressions for getting bright and dark rings in terms of the diameters.
 - (b) A grating of width 2 inches is ruled with 15000 lines per inch. Find the smallest wavelength separation that can be resolved in second order at a mean wavelength of 500nm.
 - (c) Discuss any four applications of Hall Effect.
- [8+4+4]
3. (a) Define acceptance angle of an optical fibre and derive an expression for it in terms of refractive indices of the core and cladding.
 - (b) X-rays of wavelength 0.12nm are found to undergo second order reflection at a Bragg angle of 28° from a lithium fluoride crystal. What is the inter-planar spacing of reflecting planes in the crystal?
 - (c) Explain the terms relaxation time, drift velocity and mean free path as applied to electric conduction.
- [8+4+4]
4. (a) Explain the behavior of a dielectric material in an alternative electric field. Discuss various causes for dielectric break down.
 - (b) A solid elemental dielectric with density 3×10^{28} atoms/m³ shows an electronic polarizability of 10^{-40} Fm². Calculate the ϵ_r of the material.
 - (c) What are Miller indices? Explain.
- [8+4+4]
5. (a) What are the factors affecting the architectural acoustics of a building? Explain remedies.
 - (b) State Gauss divergence and Stokes theorems.
 - (c) What is a SQUID? Explain its functioning.
- [8+4+4]

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- [8+4+4]

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