

I B. Tech I Semester Regular Examinations, January 2015**ENGINEERING PHYSICS**

(Common to Civil Engineering, Electrical and Electronics Engineering and Mechanical Engineering)

Time: 3 Hours**Max. Marks: 60**

Note: All Questions from **PART-A** are to be answered at one place.

Answer any **FOUR** questions from **Part-B**.

PART-A**6 x 2 = 12M**

1. Define interference of light .
2. What is population inversion.
3. What are lattice parameters.
4. What is internal field in dielectrics.
5. What is Meissner effect.
6. Sketch (110) plane in cube.

PART-B**4 x 12 = 48M**

1. a) Explain how Newton's rings are formed in the reflected light. Derive an expression for diameters of dark and bright rings. **8M**
b) Find the thickness of the half wave plate, when the wavelength of light is equal to 5890 Å and $\mu_o = 1.55$ and $\mu_e = 1.54$ **4M**
2. a) With the help of neat diagrams explain the construction and working of He-Ne gas laser. **8M**
b) Explain the principle of optical fiber. **4M**
3. a) Describe the seven crystal systems with neat diagrams **8M**

- b) What are Miller indices . How they are obtained. **4M**
4. a) Explain electronic polarization in atoms and obtain an expression for electronic polarizability in terms of radius of the atom. **8M**
- b) Write any four applications of super conductor. **4M**
5. a) Derive an expression for the number of electrons per unit volume in the conduction band of N- type semiconductor. **6M**
- b) Distinguish between direct and indirect band gap semiconductors **6M**
6. a) Derive time independent Schrodinger's wave equation. **8M**
- b) What are assumptions of classical free electron theory of metals. **4M**
