Code No. 9357 / N

FACULTY OF ENGINEERING

BE I Year (Main) (New) Examination, June 2015

Subject: Engineering Physics

Time : 3 Hours **Max. Marks: 75**

Note: Answer all questions from Part - A and answer any five questions from Part-B.

PART — A (25 Marks)

1. Newton's Rings are observed by keeping a spherical surface of 100 cm radius on a plane glass plate. If the diameter of the 15th bright ring is 0.590 cm, what is the wave length of light used?
2. Define the phenomenon of " Optical activity" (2)
3. Define the terms " Acceptance angle" and "numerical aperture (NA), o. an optical Fibre. (2)
4. In a Ruby laser, total no.of Cr^{+3} ions is 2.8×10^{19}. If the laser'eni0 radiation of Wave length 7000A°, calculate the energy of the laser p61"."S, (3)
5. If (3,2,6) are miller indices of a plane, the intercepts made I*the plane on the three crystallographic axes are (2)
   (a) (a,b,c) (b) (a, 2b, 3c) (c) (2a, 3b, (d) none of the above.
6. What is LED? (2)
7. Explain the Frequency and temperature dependence of dielectric polarization. (3)
8. What is Meissner's effect? (2)
9. Explain working Principle of Solar cell." (3)
10. Explain the Principle of Atomic force Miqueopy

B (SO Marks)

11 (a) Explain the diffraction due toa. Jingle slit and obtain its intensity equation and discuss different intensitycdpditions. (5)
   (b) Describe the constr4ctionVd working of He-Ne gas laser with energy level diagrams. (5)

12 (a) Derive Fermi-Dirac Distribution statistics. (5)
   (b) Apply the SchOdinger's wave equation to a particle in an infinite square well potentiakand 'derive the expression for energy level of the particle. (5)

13 (a) CalcUlAte the "Atomic radius", "Coordination number " and " Packing Fraction" of C,'13,Ca'and FCC crystals. (5)
   (b) Hall effect and derive the expression for Hall voltage and Hall coefficient. (5)

14 (a) Explain the method for determination of dielectric constant by Capacitance Bridge method. (5)
   (b) What are High T_e Super conductors and mention any four applications of super conductors. (5)

15 (a) Explain Thermal evaporation and electron beam evaporation techniques of thin film preparation. (5)
   (b) Describe the construction and working of Scanning Electron Microscope (SEM). (5)

16 (a) Explain the construction and working of Nicol's Prism. (5)
   (b) Explain different types of optical Fibre and how they effect the pulse dispersion. (5)

17 (a) Calculate the equilibrium concentration of Schottky defects. (5)
   (b) Explain "Sol-gel' and "Ball-Milling methods for preparation of nano materials. (5)