ANURAG GROUP OF INSTITUTIONS
(Autonomous)
School of Engineering
I-B.Tech. II-Semester
Second Assignment Exam
Subject: ENGINEERING PHYSICS-II

1. a. Explain Hall Effect and derive an expression for Hall coefficient of p-type or n-type semiconductor.

    b. A silicon plate of thickness 1mm, breadth 10mm is placed in a magnetic field of 0.5 Wb/m^2 acting perpendiculars to its thickness. If 10^{-2}A current flows along its length calculate the hall voltage developed if the hall coefficient is $3.66 \times 10^{-4} m^3$/coulomb

2. a. Define acceptance angle and numerical aperture of an optical fiber and obtain expressions for them.
    b. The numerical aperture of an optical fiber is 0.39, if the difference in the refractive indices of the material of its core and the cladding is 0.05, calculate the refractive index of material of the core?

3. a. write short notes on applications of optical fiber and also explain the advantages of optical fiber communications.
    b. An optical fiber has a numerical aperture of 0.20 and a cladding refractive index of 1.59. Find the acceptance angle for the fiber in water of refractive index 1.24.

4. Explain the terms   a .Population inversion b. Metastable state   c. Stimulated emission d. Spontaneous emission. E. Optical resonator.

5. Define Einstein coefficients of absorption, spontaneous emission and stimulated emission and obtain relationship between them.

6. Explain the construction and working of a Ruby laser?

7. With neat diagram explain the construction and working of He –Ne laser?

8. Describe the construction and working of a semiconductor diode laser?