**Sreenidhi Institute of Science & Technology**

**A 12**

(An Autonomous Institution)

**CODE NO: 121PH03**

**B. TECH. I – YEAR II – SEMESTER EXAMINATIONS, JULY, 2014 (REGULAR)**

**APPLIED PHYSICS (ME)**

**Time: 3 Hours Max. Marks: 70**

**Note: No additional answer sheets will be provided.**

**Part-A**

**Max.Marks:20**

**Answer all QUESTIONS.**

1. Explain the term critically damped oscillation and why it is used in pointer instruments.
2. Explain the concept of coherence.
3. What is polarization? What are the three states of polarization?
4. Explain Bohr magneton.
5. Define spontaneous and stimulated emission.
6. Write any four important applications of Nanotechnology.
7. What are the necessary conditions for obtaining interference fringes?
8. Give the relation between electron spin and magnetic moment.
9. Define Acceptance angle and Numerical Aperture.
10. Explain about resonance.

**Part – B**

**Max. Marks: 50**

**ANSWER ANY FIVE QUESTIONS. EACH QUESTION CARRIES 10 MARKS.**

1. a. Describe a method of production of ultrasonics by magnetostriction with neat sketch.

b. Explain the phenomenon of amplitude resonance and prove that Amax ∞ as damping factor b 0.

2. a. Explain Young’s experiment on the basis of wave theory.

b. Explain how Newton’s rings are formed in the reflected light.

3. a. Explain briefly the optic axis and its characteristics. [4+6]

b. Obtain the condition for primary maxima in Fraunhofer diffraction due to a single slit and derive an expression for width of the central maxima.

4. a. Explain Domain theory of Ferromagnetism. [6+4]

b. Explain the Hysteresis on the basis of Domain theory.

5. a. Explain the characteristics of LASERs. [4+6]

b. Explain the construction and working of He-Ne laser.

6. a. What are Nanomaterials? Why do they exhibit different properties? [4+6]

b. Describe one method of top-down method of Nanomaterials in detail.

7. a. A slit of width 1.5 mm is illuminated by a light of wavelength 500 nm and diffraction pattern is observed on a screen 2m away. Calculate the width of central maxima.

b. Distinguish between polarized and unpolarized light.

8. a. How materials are classified as Dia, Para and Ferro magnetic materials. [6+4]

b. The numerical aperture of an optical fiber is 0.39. If the difference in the refractive indices of the material its core and the cladding is 0.05, calculate the refractive index of the material of core and acceptance angle.

**-- 00 -- 00 --**