

**I B. Tech II Semester Supplementary Examinations, Nov/Dec - 2019**  
**ENGINEERING PHYSICS**

(Com. to CE, ME, Chem E, AE, Bio-Tech, AME, Min E, PE, PCE, Metal E)

Time: 3 hours

Max. Marks: 70

- Note: 1. Question paper consists of two parts (**Part-A** and **Part-B**)  
 2. Answering the question in **Part-A** is Compulsory  
 3. Answer any **FOUR** Questions from **Part-B**

**PART -A**

1. a) Define interference of light. (2M)
- b) Define resolving power of a microscope. (2M)
- c) What is the role of active substance in lasers? (2M)
- d) How dielectrics are different from insulators? (2M)
- e) What is a non-destructive method? (2M)
- f) State the Bragg's law. (2M)
- g) Write any two applications of paramagnetic materials. (2M)

**PART -B**

2. a) Describe how you would use Newton's rings to determine the wavelength of a monochromatic radiation and derive the relevant formula. (10M)
- b) Explain the interference of light due to thin films. (4M)
3. a) Explain the diffraction due to two parallel slits and give qualitative analysis for diffraction pattern obtained in this case. (10M)
- b) What are the types of diffraction and give the differences between them. (4M)
4. a) Obtain the relation between Einstein's coefficients for probabilities of spontaneous and stimulated emission. (10M)
- b) Explain the phenomenon of double refraction. (4M)
5. a) State and explain Sabine formula for reverberation. (7M)
- b) What is magnetostriction method? With a neat circuit diagram explain how ultrasonics are produced using this method. (7M)
6. a) Obtain an expression for the packing factor of FCC structure. (7M)
- b) Write any seven differences between fission and fusion reactions. (7M)
7. a) Obtain an expression for the internal field seen by an atom in an infinite array of atoms subjected to an external field. (10M)
- b) What is ferromagnetism? What are the distinguishing features of ferromagnetism? (4M)