

Code No: R13103

**R13****SET - 1****I B. Tech I Semester Supplementary Examinations, Oct/Nov - 2018**  
**ENGINEERING PHYSICS**

(Com. to ECE,EEE,EIE,Bio-Tech,ECom E,Agri 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 **THREE** Questions from **Part-B**
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**PART -A**

1. a) What is a plane polarized light? How it can be analyzed? (3M)
- b) Explain the characteristics of laser in contrast to ordinary light. (4M)
- c) What are polar and non polar dielectrics? (4M)
- d) Explain the significance of sound absorption coefficient. (4M)
- e) What are the limitations of classical free electron theory? (3M)
- f) Distinguish between direct band gap semiconductors and indirect band gap semiconductors. (4M)

**PART -B**

2. a) Derive cosine law with respect to thin film interference in reflection system. (8M)
- b) What is a plane diffraction grating? Obtain the condition for formation of  $n^{\text{th}}$  principal maxima. (8M)
3. a) Explain the conditions for propagation of light through an optical fibre and derive an expression for its acceptance angle. (8M)
- b) What are Miller indices? Explain how Miller indices of a crystal plane can be determined. (8M)
4. a) Explain hysteresis of a ferromagnetic material with the help of B-H curve. (8M)
- b) What are Cooper pairs? Give an outline of BCS theory of superconductivity. (8M)
5. a) How does the reverberation time affect the acoustics of a building? Briefly explain the corrective measures. (8M)
- b) Starting from the basic laws of electricity and magnetism, derive Maxwell's electromagnetic equations. (8M)
6. a) Discuss the assumptions under quantum free electron theory. Deduce the mathematical expression for electrical conductivity on the basis of quantum free electron theory. (8M)
- b) What is density of energy states in metals? Derive an expression for density of energy states and hence obtain Fermi energy of a metal. (8M)
7. a) What is Hall Effect? Deduce an expression for Hall coefficient. (8M)
- b) What is an LED? Explain the construction and working of LED. (8M)