Code No: R13203 **R13** **SET-1**

I B. Tech II Semester Supplementary Examinations, April/May - 2018
ENGINEERING PHYSICS
(Com. to CE,ME,CSE,PCE,IT,Chem E,Aero E,Auto E,Min E,Pet E,Metal E & Textile Engg)

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) Explain interference in thin films. (4M)
   b) Define crystal lattice parameter and coordination number. (4M)
   c) What is B-H curve of a ferromagnetic material? (3M)
   d) Write Maxwell's equations in integral form. (4M)
   e) Discuss assumptions under quantum free electron theory. (4M)
   f) Explain Hall effect. (3M)

PART -B

2. a) What is interference of light? Prove that the diameter of the nth dark ring in a Newton's ring set-up is directly proportional to the square root of the ring number. (10M)
   b) Explain the phenomenon of double refraction in a calcite crystal. (6M)

3. a) Derive an expression for inter planar spacing of a crystal in terms of Miller indices. Sketch the following planes in a cubic unit cell (101), (121), (010). (10M)
   b) Explain the principle of propagation of light through an optical fibre. (6M)

4. a) What is meant by local field in a dielectric? How is it calculated? (10M)
   b) Explain the Josephoson tunneling and Josephson effect in detail. (6M)

5. a) Explain what causes reverberation in a hall and how it can be minimized. Derive Sabine's expression for the reverberation time. (10M)
   b) State and explain Gauss and Stokes theorems. (6M)

6. a) Obtain the Schrodinger time independent wave equation. What is the physical significance of wave function used in this equation? (10M)
   b) Write short notes on effective mass of an electron. (6M)

7. a) Derive an expression for the density holes in the valence band of an intrinsic semiconductor. (10M)
   b) What are diffusion and drift currents? Obtain Einstein's relation for doped semiconductors. (6M)
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