

**I B. Tech II Semester Supplementary Examinations, Nov/Dec - 2018****ENGINEERING PHYSICS**

(Com. to CE, ME, CSE, PCE, IT, CHEM. E, AERO E, AUTO E, MIN E, PET E, METAL E & TEXTILE ENG.)

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 Rayleigh's criterion for resolution. (3M)
- b) Sketch the (100), (110) and (111) planes in a simple cubic structure. (3M)
- c) Define ionic and orientation polarizations in dielectrics. (4M)
- d) State and explain Stokes theorem. (4M)
- e) What are Matter waves? How they are different from electromagnetic waves? (4M)
- f) What are direct and indirect band gap semiconductors? Explain. (4M)

**PART -B**

2. a) Explain the phenomenon of interference in reflected light from a thin film. Obtain the condition for maxima and minima. (8M)
- b) State and explain the Hall-effect and derive the expression for Hall coefficient. (8M)
3. a) Explain numerical aperture of an optical fibre and hence derive an expression for the same in terms of refractive indices with neat diagram. (8M)
- b) Explain the classification of solid materials into three groups on the basis of band theory of solids. (8M)
4. a) Distinguish between dia, para, ferro, antiferro and ferri magnetic materials. (8M)
- b) State and explain basic laws of electromagnetism in their integral form. (8M)
5. a) Discuss about the factors affecting the architectural acoustics and suggest the remedies. (8M)
- b) What are superconductors? Explain BCS theory of superconductivity. (8M)
6. a) Obtain the energy values of a particle confined in a one dimensional infinite square well-potential. (8M)
- b) Discuss about seven crystal systems and their corresponding Bravais lattice. (8M)
7. a) Obtain the position of Fermi level and estimate concentration of charge carriers in n-type semiconductor. (8M)
- b) Explain Fraunhofer diffraction using single slit and extend it to N slits. (8M)