PVP 12

Code: **CE2T3, EE2T2, ME2T2, AE2T4**

I B.Tech-II Semester-Regular Examinations - July 2014

ENGINEERING PHYSICS
(Common for CIVIL, EEE, ME & AE)

Duration: 3 hours Marks: 5x14=70

Answer any FIVE questions. All questions carry equal marks

1. a) Describe G.P Thomson's experiment on electron diffraction and explain the important conclusions. 10 M

   b) Give the Physical significance of the wave function. 4 M

2. a) Describe the seven systems of crystals with suitable diagrams. . 7 M

   b) What are lattice planes of a crystal? How they are represented in terms of miller indices. 7 M

3. a) Explain the classical free electron theory of metals. 6 M

   b) Explain Fermi-Dirac distribution function. Discuss its variation with temperature. 8 M

4. a) Explain ionic polarizability. Derive an expression for ionic polarisation. 7 M

b) What are ferroelectric materials? Discuss their properties and applications. 7 M

5. a) What is meant by ferromagnetic materials? Discuss Weiss theory of ferromagnetism. 8 M

b) Explain the concept of superconductivity. What are the properties of the superconductivity? 6 M

6. a) Derive an expression for the continuity equation. 8 M

b) Explain the concept of indirect gap semiconductor. 6 M

7. a) Explain the terms: 'absorption', 'spontaneous emission', 'stimulated emission' and population inversion. 8 M

b) Define numerical aperture and derive an expression for the numerical aperture of an optical fibre. 6 M

8. a) Write in detail a note on nanotechnology. 7 M

b) What do you mean quantum wire, quantum dot and quantum well ? 7 M