

I B. Tech II Semester Supplementary Examinations, Nov/Dec - 2018
ENGINEERING PHYSICS-II
(Com. to All Branches)

Time: 3 hours

Max. Marks: 75

Answer any **FIVE** Questions
All Questions carry **Equal** Marks

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1. a) Discuss the wave functions, probability densities and energy levels for a particle in a one dimensional box by considering the ground state and the first two excited states. (10M)
- b) Discuss advantages of quantum computing over classical computing. (5M)
2. a) Define the terms: (10M)
  - (i) Mean collision time
  - (ii) Mean free path
  - (iii) Drift velocity
  - (iv) Relaxation time
  - (v) Electrical resistance
- b) What are the assumptions of classical free electron theory? (5M)
3. a) Describe the salient features of Kronig-Penney model. (10M)
- b) Explain Bloch's theory of electrical conduction. (5M)
4. a) What are ferromagnetic domains? Discuss Weiss theory of ferromagnetism. (10M)
- b) Distinguish between hard and soft magnetic materials. (5M)
5. a) Explain AC and DC Josephson effect of superconductivity. (10M)
- b) What is penetration depth? Explain. (5M)
6. a) Explain the phenomenon of electronic polarization in dielectrics. Derive an expression for the same. (10M)
- b) Derive Clausius-Mossotti equation. (5M)
7. a) Derive an expression for electron concentration in an intrinsic semiconductor. (10M)
- b) Explain Hall effect. (5M)
8. a) Write a note on carbon nano tubes and their physical properties. (10M)
- b) Discuss the properties of nano materials. (5M)

