Code No: R10203 **R10** **SET-1**

I B. Tech II Semester Supplementary Examinations, March - 2022

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) Write down the advantages of quantum computing over classical computation. (5M)

b) Obtain the energy values and normalized wave functions for a particle in a one-dimensional infinite potential box. (10M)

2. a) Explain the Fermi-Dirac distribution function. Plot this function for various temperatures, including 0K. (10M)

b) Explain the concept of Fermi energy. (5M)

3. a) Discuss the Kronig-Penney model for the motion of an electron in a periodic potential. (10M)

b) Explain the concept of the effective mass of an electron. (5M)

4. a) Define the terms i) Permeability ii) Magnetization (5M)

b) Explain the origin of magnetic moments in the materials. (10M)

5. Write short notes on the following: (15M)
(a) Meissner effect.
(b) Flux quantization.
(c) BCS theory

6. a) Define the terms ionic polarization and ionic polarizability for an ionic dielectric. (5M)

b) Describe ionic polarization in an ionic dielectric and obtain an expression for ionic polarizability. 10M)

7. a) State and explain the Hall effect. (5M)

b) Show that for n-type semiconductor the Hall coefficient RH= - $\frac{1}{n_e}$ (10M)

8. a) What are nanomaterials? Discuss the chemical properties of nanomaterials. (10M)

b) Write a note on Quantum dots and quantum wells. (5M)
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