Code: 15A56101 **R15**

B.Tech I Year II Semester (R15) Supplementary Examinations December 2019

ENGINEERING PHYSICS

(Common to IT, ECE, EIE & ME)

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

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1 Answer the following: (10 X 02 = 20 Marks)

(a) What is the role of optical resonator?
(b) What is diffraction?
(c) Define unit cell.
(d) Illustrate Miller indices.
(e) State de'Broglie hypothesis.
(f) What is Fermi-Dirac distribution function?
(g) What is Hall effect?
(h) What is hysteresis?
(i) State Josephson effect.
(j) What is quantum confinement?

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

2 Explain the Fraunhofer diffraction due single slit and double slit.

OR

3 Derive Einstein's coefficients of absorption, spontaneous and stimulation emission. Also obtain the relation between them.

UNIT – II

4 Derive and tabulate the packing fractions of SC, BCC and FCC.

OR

5 What are ultrasonics? Explain the productions of ultrasonics by piezoelectric method.

UNIT – III

6 Write the properties of matter waves. Derive Schrodinger time independent wave equation.

OR

7 Explain the Kronig-Penny model.

UNIT – IV

8 Explain the formation of P-N junction with neat diagram and explain the direct & indirect band gap semiconductors.

OR

9 Classify and explain the magnetic materials and its properties.

UNIT – V

10 Explain nano scale effects on optical and magnetic properties of a material.

OR

11 Classify and explain the bottom-up synthesis methods.

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