CODE: 17CA55101

B. Tech I Year II Semester (R17) Regular Examinations, May/June - 2018

ENGINEERING PHYSICS

(Common to ME & ECE)

Time: 3 hours Max Marks: 70

PART – A

1. Answer any **TEN** questions (10 x 2 = 20 Marks)

(a) What is interference of light?

(b) Define the term total internal reflection

(c) The ratio of population of two energy levels is 1.059×10^{-30}. Find the wavelength of light emitted by spontaneous emissions at 300 K.

(d) What is X-ray diffraction?

(e) What are the Miller Indices?

(f) What are the characteristics of a matter waves?

(g) What is Kronig-Penny model?

(h) What are Eigen functions?

(i) What is band gap of a semiconductor?

(j) What is a soft magnetic material? Give the examples

(k) State the Meissner effect

(l) What are the types of nanomaterials?

PART - B

Answer all **FIVE** units (5 x 10 = 50 Marks)

2. (a) Explain Fraunhofer diffraction at a double slits with ray diagram.

(b) Discuss the theory of Newton rings with diagram.

OR

3. (a) Describe with principle, construction and working of ruby laser.

(b) Define terms acceptance angle and numerical aperture.

UNIT-II

4. (a) State and prove Braggs Law

(b) What are Bravias lattice? Sketch the following planes in a cubic unit cell (0 1 1), (1 1 0) and (1 1 1).

OR

5. (a) What are the characteristics properties of ultrasonic waves.

(b) Explain the Production of Ultrasonic waves using the piezoelectric method.

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UNIT-III

6. (a) Solve Schrodinger's time independent wave equation in one dimension for a particle confined to one-dimensional infinite potential well. Obtain the energy Eigen values and Eigen functions

(b) What are the characteristics properties of wavefunctions?

OR

7. (a) Describe the classifications of solids

(b) Calculate the drift velocity of electrons in a metal of thickness 1mm across which a potential of 1 volt is applied at temperature 300K. Given, the mobility of electron is 40 cm^2/Vs.

UNIT-IV

8. (a) Explain the formation of pn junction diode with diagram.

(b) What are the types of semiconductors?

OR

9. (a) Explain the B-H curve with hysteresis loop

(b) What is difference between hard and soft magnetic materials.

UNIT-V

10. (a) Explain the types of superconductivity with examples.

(b) Discuss the applications of superconductors.

OR

11 (a) Discuss the important applications of nanomaterials

(b) Explain briefly ball mill deposition method with neat sketch

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