Reg.No.:								

VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN
[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]
Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

Question Paper Code: 3002

B.E. / B.Tech. DEGREE SUPPLEMENTARY EXAMINATIONS – FEB. / MAR. 2020
First Semester
Computer Science and Engineering
U19PH101 – SEMICONDUCTOR PHYSICS AND OPTOELECTRONICS
(Common to Information Technology)
(Regulation 2019)

Time : Three Hours | Maximum : 100 Marks

Answer ALL the questions

PART – A

(10 x 2 = 20 Marks)

1. What are the conditions for Interference?
2. List out the applications of Michelson Interferometer
3. Distinguish two kinds of Diffraction.
4. Differentiate Quarter Wave plate and Half wave plate.
5. Sketch the (100) and (110) planes of simple cubic structure.
6. Define unit cell and sketch simple cubic unit cell.
7. What is Fermi energy level?
8. Define Effective Mass of Electron.
9. What is the working principle of LED?
10. What are Birefringence crystals?

PART – B

(5 x 16 = 80 Marks)

11. a) Deduce an expression to determine the thickness of a thin film using Air Wedge Method and also explain how to test the flatness of the glass surface.

(OR)

b) i. Explain with neat diagram of temperature sensor and Displacement Sensor. (10)

ii. Calculate Numerical aperture, Acceptance angle and Critical angle of a fiber having core refractive index 1.50 and cladding refractive index 1.45. (6)

12. a) Give the theory of plane transmission grating? Discuss how will you employ it for determination of wavelength of light using grating.

(OR)

b) Explain the technique of production of Plane, Circular and Elliptically Polarized light.

13. a) Describe the HCP crystal structure and Deduce its atomic packing factor.

(OR)

b) Explain the various types of Crystalline defects with necessary diagram.

14. a) Deduce an expression for Density of energy states for any semiconducting material.

(OR)

b) i. State Hall Effect and derive an expression for Hall voltage. (12)

ii. Give its applications. (4)

15. a) Explain the principle, construction and working of LDR.

(OR)

b) Explain the Principle, Construction and working of Solar Cell with necessary diagrams.
