

Reg. No.

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B.E. / B.TECH. DEGREE EXAMINATIONS, DEC 2019

First Semester

PH18151 – Engineering Physics*(Common to all branches)***(Regulation 2018)****Time: Three Hours****Maximum : 100 Marks**

Answer ALL questions

PART A - (10 X 2 = 20 Marks)

	CO	RBT
1. Distinguish between crystalline and amorphous solids.	1	U
2. Name the seven crystal systems.	1	R
3. Differentiate between good conductors and poor conductors.	2	U
4. State Newton's law of cooling.	2	R
5. What are matter waves?	3	R
6. Mention any two physical significance of Wave function (ψ)	3	U
7. Define Sound intensity level and write its unit.	4	R
8. What is A scan by Ultrasonic waves.	4	R
9. Mention the any four applications of laser light.	5	U
10. Define Acceptance angle of an optical fiber?	5	R

PART B - (5 X16 = 80 Marks)

11. (a) Determine the number of atoms per unit cell, Coordination number, atomic radius and Atomic packing factor for FCC and HCP Unit cells. **(8+8)** 1 U
- (OR)**
- (b) (i) Discuss about various types of crystal defects with neat sketches. **(4 x 3)** 1 U
- (ii) State: Bragg's law of diffraction **(4)** 1 R
12. (a) Derive the equation for the heat conduction through a cylindrical shell and discuss about the heat conduction through a rubber tube with necessary diagram. **(8+8)** 2 U

(OR)

- (b) Describe with relevant theory, the method of determining the coefficient of thermal conductivity of a bad conductor by Lee's Disc method. **(9+7) 2 U**
13. (a) Define Compton effect. Derive an expression for the Compton shift of an x-ray photon when it undergoes inelastic collision with an electron at rest. **(2+14) 3 U**
- (OR)**
- (b) Apply Schrodinger time independent wave equation to the particle in a potential box and deduce the Eigen values and Eigen function for various levels. **(16) 3 AP**
14. (a) (i) What is meant by Magnetostriction effect? Explain the Magnetostriction method for the production of ultrasonic waves. **(2+2+8) 4 U**
- (ii) Mention any Four applications of Ultrasonic waves. **(4) 4 R**
- (OR)**
- (b) (i) What is reverberation time? **(2) 4 R**
- (ii) Derive the Sabine's formula for Reverberation time of a hall. **(14) 4 U**
15. (a) (i) With neat diagram, explain the principle, construction and working of CO₂ laser. **(2+2+7) 5 U**
- (ii) Discuss the various applications of lasers in the field of Engineering and Medicine. **(5) 5 U**
- (OR)**
- (b) (i) Discuss in detail, with neat diagrams, the classification of optical fibers based on mode and refractive index profile. **(6+6) 5 U**
- (ii) What are the conditions for total internal reflection **(4) 5 R**