

Reg. No.

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

First Semester

PH16151 – ENGINEERING PHYSICS - I*(Common to all branches)***(Regulation 2016)****Time: Three Hours****Maximum : 100 Marks**

Answer ALL questions

PART A - (10 X 2 = 20 Marks)

	CO	RBT
1. Distinguish between Uniform and Non-uniform bending of beams.	1	U
2. Lattice constant of Copper having fcc structure is 3.6 \AA . Find its atomic radius.	1	AP
3. Define : Thermal conductivity.	2	R
4. List out the factors affecting the elasticity?	2	U
5. What are the differences between electron microscope and optical microscope.	3	R
6. Define: Matter waves?	3	R
7. Mention any Four properties of Ultrasonic Waves.	4	U
8. State Weber-Fechner Law.	4	R
9. Mention the difference between ordinary light and laser light.	5	U
10. What are the different types of optical fibers based on the Refractive index profile?	5	R

PART B - (5 X16 = 80 Marks)

11. (a) Find the number of atoms per unit cell, Coordination number, (8+8) atomic radius and Atomic packing factor for BCC and FCC Unit cells. 1 AN

(OR)

- (b) (i) Explain the construction and working of Bridgman method of (2+8+2) crystal growth and write its advantages. 1 U
- (ii) What are Miller indices (4) 1 R

12. (a) Derive the expression for the Young's Modulus of a Cantilever and explain the experiment to determine the Young's modulus of a cantilever. **(8+8) 2 U**
- (OR)**
- (b) Describe with relevant theory, the method of determining the coefficient of thermal conductivity of a poor conductor by Lee's Disc method. **(9+7) 3 AN**
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 AN**
- (OR)**
- (b) Derive Schrodinger time dependent and time independent wave equations. **(8+8) 3 AN**
14. (a) (i) What is meant by Piezo-electric effect? Describe the Piezo electric method for the production of Ultrasonic waves. **(2+2+8) 4 U**
- (ii) Mention any Four applications of Ultrasonics. **(4) 4 U**
- (OR)**
- (b) (i) What is reverberation time? **(2) 4 R**
- (ii) Drive the Sabine's formula for Reverberation time of a hall. **(14) 4 AN**
15. (a) (i) With neat diagram, explain the principle, construction and working of Nd YAG 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) Draw the Block diagram for fiber optic communication and Explain the working principle. **(5+3) 5 U**
- (ii) With neat diagram, discuss different types of optical fibers. **(8) 5 U**