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**B.E/B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, APRIL/MAY 2014**

Common to All Branches  
Semester I

**PH 171 / PH 9111 - ENGINEERING PHYSICS**

(Regulations 2004/2008)

Time : Three hours

Maximum : 100 marks

(Answer ALL questions)

**PART – A (10 X 2 = 20 marks)**

1. What are the advantages of I – shaped girders?
2. Write the relation connecting the three moduli of elasticity.
3. Prove that 1 dB change in the intensity level of sound corresponds to an increase of 26% of the intensity of sound.
4. What is acoustic grating?
5. Find the efficiency of a Carnot's engine working between ice and boiling water.
6. What are bimetallic strips? Where are they used?
7. Calculate the numerical aperture and acceptance angle of a fiber having core refractive index 1.56 and cladding refractive index 1.50
8. What are antireflection coatings? Give examples.
9. Draw (111) and (110) planes of a cubic crystal.
10. What are Bravais lattices?

**PART – B (5 X 16 = 80 marks)**

11. (i) Calculate the atomic radius and Packing factor for Body centered cubic (BCC) and Face Centered cubic (FCC) systems (10)  
(ii) Write notes on point imperfections and line imperfections. (6)
12. a) Derive Sabine's formula for reverberation time with the explanation of growth and decay of sound energy

(OR)

- b) (i) What is Piezoelectric effect? With a neat circuit diagram, explain the generation of ultrasonic waves using Piezoelectric oscillator. (12)  
(ii) What are the industrial applications of Ultrasonics? (4)

13. a) Describe with theory in detail Lee's disc method for determining the thermal conductivity of a bad conductor.

(OR)

b) Describe in detail the various strokes in Diesel Engine and derive an expression for its efficiency.

14. a) Explain the theory of non-uniform bending of beam. Describe the experiment to determine the Young's modulus of the material of the beam.

(OR)

b) Give the theory of Torsional oscillations. Describe the experiment to determine the rigidity modulus of the material of the wire.

15. a) (i) Describe the construction, working, and fringe formation of Michelson's Interferometer (12)  
(ii) How is it used to determine the thickness of a thin transparent sheet? (4)

(OR)

b) (i) Describe the construction and working of Nd: YAG laser with energy level diagram. (12)  
(ii) Mention the applications of Lasers. (4)