B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2007.

First Semester

Civil Engineering

PH 125/PH 131— PHYSICS — I

(Common to All Branch Except Marine Engineering)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is meant by bending moment of a beam?

2. Define the coefficient of viscosity of a liquid.

3. Calculate the increase in the acoustic intensity level when the sound intensity is doubled.

4. What is magnetostriction effect?

5. Mention some of the properties of thermal insulating materials.

6. Calculate the efficiency of the Carnot's engine working between 423 and 323 K.

7. Define luminous flux.

8. What is an antireflection coating?

9. What are the conditions needed for laser action?

10. Calculate the numerical aperture and acceptance angle of a fiber with a core index of 1.54 and cladding index of 1.50.

PART B — (5 × 16 = 80 marks)

11. (a) Give the theory of torsion pendulum and describe a method to find moment of inertia of an irregular body.

Or

(b) Discuss the principle used in vacuum pumps and gauges. Describe on the pumps and its working.

12. (a) Derive Sabine's formula for reverberation time and explain significance.

Or

(b) Describe with suitable circuit diagram, the production of ultraso waves using piezo-electric crystal.

13. (a) Deduce a mathematical expression for one-dimensional heat flow.

Or

(b) Describe the working of an Otto engine and obtain an expression for i efficiency.

14. (a) Explain how sextants are used to measure the height of towers.

Or

(b) Describe the construction and working of a scanning electron microscop

15. (a) Discuss with theory the construction and working of a homojunctio semiconductor laser.

Or

(b) Derive an expression for numerical aperture and angle of acceptance of fiber in terms of refractive indices of the core and cladding.

A 14