Reg. No. : | | | | | | | | | | |

Question Paper Code: 11003

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2016

First Semester

Civil Engineering

01UPH103 - ENGINEERING PHYSICS

(Common to ALL Branches)

(Regulation 2013)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions.

PART A - (10 x 2 = 20 Marks)

1. Mention any two merits and demerits of Piezo electric oscillator.
2. How depth of the sea can be measured using ultrasonic waves?
3. What do you mean by population inversion?
4. Define optical pumping.
5. What is splicing? Mention its types.
6. Distinguish between an active and passive sensor.
7. State Planck's hypothesis on black body radiation.
8. What is meant by degenerate and non-degenerate states?
9. Define space lattice and lattice points.
10. Mention any two differences between edge and screw dislocation.

PART - B (5 x 16 = 80 Marks)

11. (a) What is inverse piezoelectric effect? Describe the construction and working of a piezoelectric generator to produce ultrasonic sound waves. (16)

Or

(b) (i) Explain with neat diagram the working of ultra sonogram. (10)

(ii) Write a note on cavitation. (6)

12. (a) Explain the principle, construction and working of Co_2 laser. (16)

Or

(b) Describe the construction and working of Nd-YAG laser with neat energy level diagram. (16)

13. (a) (i) With neat diagram, explain the principle and propagation of light in an optical fiber. (12)

(ii) Calculate the numerical aperture and hence the acceptance angle for an optical fiber whose core and cladding has refractive index of 1.59 and 1.40 respectively. (4)

Or

(b) (i) With neat diagram explain the fabrication of optical fiber by crucible-crucible method. (8)

(ii) Discuss the advantages of optical fiber communication over conventional metallic type wire communication. (8)

14. (a) Derive the time independent Schrödinger's wave equation and apply it to determine the energy of a particle trapped in one dimension box. (16)

Or

(b) Explain the construction and working of transmission electron microscope. Give its merits and demerits . (16)

15. (a) Deduce the atomic packing factor of FCC crystal with neat diagram. (16)

Or

(b) Explain the crystal defects in detail. (16)