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Question Paper Code : 21682

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2013.

First Semester

Civil Engineering

PH 2111/PH 13/080040001 — ENGINEERING PHYSICS — I

(Common to all Branches)

(Regulation 2008)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — ($10 \times 2 = 20$ marks)

1. What is cavitations?

2. Why can loudspeaker not be used to produce ultrasonic?

3. Calculate the wavelength of radiation emitted by an LED made up of a semiconducting material with band gap energy 2.8 eV.

4. What are the advantages of oxygen assisted laser cutting?

5. What are the conditions to be satisfied for total internal reflection?

6. The refractive index of core and cladding are 1.60 and 1.49 respectively. Calculate the critical angle at core-cladding interface.

7. Mention the physical significance of wave function ψ .

8. Define blackbody.

9. Determine the distance between adjacent atoms of platinum which has an FCC structure a = 3.923 Å.

10. Define Burger vector.

PART B — (5 × 16 = 80 marks)

11. (a) What is magnetostrictive effect? Describe with principle the magnetostriction method of producing ultrasonic.

Or

(b) Briefly explain the three types of non-destructive testing methods using ultrasonic with a neat diagram.

12. (a) Explain the principle, construction and working of CO_2 laser.

Or

(b) Explain holography. How will you create a hologram of an object and recreate the image of the original object?

13. (a) Explain in detail the classification of optical fibre.

Or

(b) Describe the principle of fibre optic sensors. Explain fibre optic displacement sensor and fibre optic temperature sensor.

14. (a) Derive time independent Schrodinger wave equation.

Or

(b) Explain in detail about the principle, construction and working of scanning electron microscope.

15. (a) Define packing factor. Finding the packing factor for HCP structure.

Or

(b) What is meant by crystal defect? Explain the various types of crystal defects with neat diagram.

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