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Question Paper Code : 51766

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2014.

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 × 2 = 20 marks)

1. What are the uses of magnetostriction generator?
2. What is the importance of SONOGRAM?
3. What are the advantages of semiconductor laser over He –Ne laser?
4. How do you explain the use of lasers in wire drawing?
5. How will you calculate the loss in optical fibre communication?
6. Which one is the best sensor : temperature sensor or pressure sensor?
7. Which law is most suited to explain the black body radiation? Why?
8. Why is SEM preferred in surface analysis than TEM?
9. Distinguish between interplanar spacing and interatomic spacing.
10. What is the coordination number of ZnS?

PART B — (5 × 16 = 80 marks)

11. (a) Describe the production of ultrasonic waves using
 - (i) Magnetostriction effect
 - (ii) Piezoelectric method

Or

- (b) Discuss the industrial and medical applications of ultrasonic waves.

12. (a) State and explain spontaneous emission and stimulated emission processes in lasers. Hence derive expressions for Einstein's coefficients.

Or

- (b) Explain the construction and reconstruction in holography. How will you use holography technique in mechanical engineering components?
13. (a) Explain the various types of optical fibres and discuss the double crucible technique of fibre drawing.

Or

- (b) With suitable sketches, explain the construction and working of detectors.
14. (a) State and explain Compton effect. Hence drive the expression for analysing the wavelength patterns.

Or

- (b) Discuss the physical significance of wave function and explain how it is used in the case of "particle in a one dimensional box".
15. (a) Derive expressions for the packing factor of HCP and diamond structures.

Or

- (b) Write an essay on crystal defects with special reference to the Burger vector.
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