

Question Paper Code: 43084

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2018

First Semester Civil Engineering

PH 2111 - ENGINEERING PHYSICS - I

(Common to all Branches) (Regulations 2008)

Time: Three Hours

Maximum: 100 Marks

Answer ALL questions.

PART - A

(10×2=20 Marks)

- 1. What are ultrasonic waves? Name any two properties of it.
- 2. What is acoustic grating?
- 3. What is stimulated emission?
- 4. What are the characteristics of the laser?
- 5. State the principle of light propagation in optical fibre.
- 6. How Fibres are used as a sensors?
- 7. State Planck's law of radiation.
- 8. What are advantages of scanning electron microscope?
- 9. Define packing factor.
- 10. What are the limitations of Czochralski method?

PART - B

 $(5\times16=80 \text{ Marks})$

11. a) What is magnetostrictive effect? Describe the construction and working of a magnetostriction oscillator to produce ultrasonic waves and explain its merits and demerits.

(OR)

- b) Describe the principle and working of a Sonogram.
- 12. a) Explain the construction and working of Nd-YAG laser with neat diagram.

(OR)

- b) Explain the principle, construction and working of a semiconductor diode laser with necessary diagrams.
- 13. a) Explain the propagation of light through optical fibre and derive an expression for numerical aperture.

(OR)

- b) Write short notes on:
 - i) Endoscope.

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ii) Fibre optic-displacement sensor.

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14. a) Solve Schrodinger wave equation of a particle in box (one dimensional) and obtain the energy Eigen values.

(OR)

- b) What is the principle of transmission electron microscope? Draw the construction of transmission electron microscope and explain its working.
- 15. a) Define the term Atomic radius. Calculate Atomic radius and Packing factor for SC, BCC and FCC structures.

(OR)

b) Describe Bridgmann method of crystal growth. Mention its advantages and disadvantages.