





## PART – B

(5×16=80 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. (8)

ii) Fibre optic-displacement sensor. (8)

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.