

NOVEMBER/DECEMBER 2019

MPH24C — NONLINEAR OPTICS

Time : Three hours

Maximum : 75 marks

SECTION A — (5 × 6 = 30 marks)

Answer ALL questions

All questions carry equal marks

(a) Explain the working of Nd-YAG laser.

Or

(b) What is the principle of diode laser? Give its theory.

2. (a) Distinguish between second and third harmonic generations.

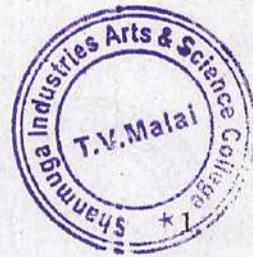
Or

(b) Discuss optical bistability.

3. (a) Explain two photon absorption.

Or

(b) Discuss the refractive index variation with intensity of the beam.



4. (a) Write a note on nonlinear optical properties of urea.

Or

- (b) Discuss the nonlinear optical properties of thiorea complex.

5. (a) Differentiate between step index and graded index fibers.

Or

- (b) What is dispersion in optical fiber? Explain its types.

SECTION B — (3 × 15 = 45 marks)

Answer any THREE questions.

All questions carry equal marks

6. Describe the construction and working of Argon ion laser with neat energy level diagram
7. Discuss the propagation of electromagnetic waves in a anisotropic crystalline medium.

8. Give the theory of parametric amplification. Obtain threshold condition for parametric oscillation.

9. Write a note on

(a) FTIR and

(b) NMR

10. Discuss in detail various types of losses in optical fiber.

