

45073 (D)

M.Sc. DEGREE EXAMINATION, MARCH/APRIL 2020.

FOURTH SEMESTER

Physics

Paper III — PHOTONICS

Time : Three hours

Maximum : 75 marks

(No additional sheet will be supplied)

PART A — (5 × 3 = 15 marks)

Answer any FIVE questions.

Each question carries 3 marks.

Each answer should not exceed 1 page.

1. Write a brief note on Fiber optical isolator.
2. Explain Mach-Zehnder interferometer sensors.
3. Write a brief note on Channel wave guide.
4. Explain Wave guide array laser.
5. Write a short note on Vanderlugt filter.
6. Explain Image de-blurring.
7. Define what is Photonic crystal and write its advantages.
8. Write about the advantages of photonic crystal fibers.

PART B — (4 × 15 = 60 marks)

Answer ALL questions.

Each question carries 15 marks.

Each answer should not exceed 6 pages.

UNIT I

9. Explain about :
 - (a) Fiber Optic sensor and
 - (b) Intensity modulator sensor.

Or

10. Briefly explain about an Optical bio sensors and its advantages.

UNIT II

11. Write a note on :
- (a) Distributed Bragg reflection and
 - (b) Distributed feedback lasers.

Or

12. What is integrated photodiode and explain, and write their advantages?

UNIT III

13. Write note on :
- (a) Photonics switches
 - (b) Bistable optical devices.

Or

14. What is Self-electro-optic effect? Explain the working of self-electro-optic effect devices.

15. Explain about :
- (a) Photonic crystal sensors
 - (b) Photonic crystal optical circuitry.

Or

16. Write a brief note on Nonlinear Photonic crystals. Write its advantages.

