

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/
COMMERCIAL PRACTICE, APRIL – 2024**

OPTICAL FIBER COMMUNICATION

[Maximum Marks : 100]

[Time : 3 hours]

PART – A
(Maximum Marks : 10)

Marks

I. Answer **all** questions in one or two sentences. Each question carries 2 marks.

1. Define Total Internal Reflection.
2. Define step index fiber.
3. Expand the acronyms LASER and LED.
4. List the basic blocks of optic fiber transmitter.
5. Draw the schematic diagram of a four port circulator.

(5x2=10)

PART – B
(Maximum Marks : 30)

II. Answer any **five** of the following questions. Each question carries 6 marks.

1. State and explain Snells law of Refraction.
2. Differentiate between skew symmetric and meridional rays.
3. Explain the difference between direct band gap and indirect band gap semiconductors.
4. Explain the structure of surface emitting LED.
5. Differentiate between spontaneous emission and stimulated emission.
6. Explain WDM.
7. Explain the working of isolators used in optic fiber communication.

(5x6=30)

PART – C

(Maximum Marks : 60)

(Answer **one full** question from each unit. Each full question carries 15 marks)

UNIT – I

- III.** Define numerical aperture and angle of acceptance and explain their significance in optic fiber communications. (15)

OR

- IV.** (a) Explain absorption, scattering and dispersion. (7)

- (b) Explain different modes in optic fiber. (8)

UNIT – II

- V.** (a) Explain the working of LED. (10)

- (b) Draw a detailed sketch of edge emitting LED. (5)

OR

- VI.** (a) Explain the working of LASER. (10)

- (b) Explain the structure and working of PIN photo diode. (5)

UNIT –III

- VII.** With a neat block diagram explain the optic fiber transceiver. (15)

OR

- VIII.** (a) Explain the working of SOA and list its advantages and disadvantages. (8)

- (b) Differentiate between EDFA and Raman Amplifier. (7)

UNIT – IV

- IX.** (a) Explain different type of Splicers used in OFC. (8)

- (b) Draw and explain circulator used in OFC. (7)

OR

- X.** (a) Explain Optical Modulators. (8)

- (b) Describe the function of beam splitter. (7)
