

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/  
COMMERCIAL PRACTICE, NOVEMBER - 2022**

**OPTICAL FIBRE COMMUNICATION**

[Maximum marks: 100]

(Time: 3 Hours)

**PART – A**

**Maximum marks : 10**

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

1. Define – Acceptance angle in optical fibre.
2. Define absorption in optical fibre.
3. Define population inversion in LASER.
4. What is an optical amplifier?
5. Differentiate between splices and connectors.

(5 x 2 = 10)

**PART – B**

**Maximum marks : 30**

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

1. Differentiate between meridional rays and skew rays.
2. Differentiate between direct and indirect band gap.
3. Compare LED and LASER diodes.
4. Compare various optical amplifiers.
5. Explain the basic optical communication system with block diagram.
6. Describe star couplers.
7. Explain the optical isolators.

(5 x 6 = 30)

**PART – C**

**Maximum marks : 60**

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

**UNIT –I**

III.(a) Explain various optical fibres based on transmission mode and refractive Index profile (10)

(b) Describe light transmission in an optical fibre. (5)

OR

IV.(a) Describe different types of fibre materials. (10)

(b) List the five application of optical fibre. (5)

### UNIT-II

V.(a) Explain the structure, advantages and disadvantages of surface emitting LED. (10)

(b) Draw the structure of LASER diode. (5)

OR

VI.(a) Explain structure and working principle of Avalanche photo diode. (10)

(b) List the requirements of photodetectors. (5)

### UNIT-III

VII.(a) Explain the working, advantages and application of Erbium Doped Fibre Amplifier with neat diagrams. (10)

(b) What are the advantages and disadvantages of semiconductor optical amplifier. (5)

OR

VIII.(a) With block diagram explain the optical transmitter and optical receivers. (10)

(b) Explain the basic idea of wavelength division multiplexing (WDM) (5)

### UNIT-IV

IX. (a) Explain the different types of scattering losses. (10)

(b) Compare intra and inter modal dispersion losses. (5)

OR

X. (a) Explain different types of optical couplers. (10)

(b) Explain beam splitters in optical fibre. (5)

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