

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/
MANAGEMENT/COMMERCIAL PRACTICE — OCTOBER, 2017

OPTICAL FIBER COMMUNICATION

[Time : 3 hours

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

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

1. Define dispersion.
2. List the applications of LASER diode.
3. List the basic processes involved in Operation of an LED.
4. List the applications of isolators.
5. List different splicing techniques.

(5×2 = 10)

PART — B

(Maximum marks : 30)

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

1. Explain the structure of an optical fiber.
2. Explain the principle of multimode transmission in optical fiber.
3. Explain the advantages of semiconductor optical amplifier.
4. Differentiate direct and indirect bandgap semiconductors.
5. Explain the basic concept of optical amplifiers.
6. Explain different types of scattering losses.
7. Explain the principle of optical circulators.

(5×6)

PART — C

(Maximum marks : 60)

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

UNIT — I

- III (a) Explain the different ray types applicable in optical transmission. 9
 (b) Explain the advantages of fiber optic communication system. 6

OR

- IV (a) Explain the classification of optical fibers based on refractive index profile. 8
 (b) Write notes on :
 (i) Total internal reflection (ii) Acceptance angle 7

UNIT — II

- V (a) Explain the working principle of LASER diode. 8
 (b) Explain the working principle of Avalanche photodiode. 7

OR

- VI (a) Explain working principle of Edge emitting LED. 9
 (b) List the requirements of photodetector. 6

UNIT — III

- VII (a) Explain the block diagram optical fiber communication system. 8
 (b) Explain the working principle of Erbium doped fiber amplifier. 7

OR

- VIII (a) With a suitable diagram describe optical transceiver. 8
 (b) Compare different optical amplifiers. 7

UNIT — IV

- IX (a) Explain dispersion losses in optical fiber communication. 8
 (b) Describe the need for fiber connectors and what are the different types of connectors. 7

OR

- X (a) Explain the OTDR method of measurement of attenuation losses in optical fiber. 8
 (b) Describe four port couplers and star couplers. 7