

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/  
MANAGEMENT/COMMERCIAL PRACTICE — APRIL, 2018

**OPTICAL FIBRE 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 numerical aperture.
2. List the applications of optical fibre.
3. List the applications of LED.
4. State the principle of WDM.
5. List the advantages of optical couplers.

(5×2 = 10)

PART — B

(Maximum marks : 30)

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

1. List the advantages of optical fibre communication.
2. Explain the principle of photo detectors.
3. Explain direct and indirect energy band gap in semiconductors.
4. Explain the basic concepts of optical amplifiers.
5. Draw the block diagram of optical transceivers.
6. Explain the working principle of optical modulators.
7. Explain OTDR method, for the measurement of attenuation loss in optical fibre.

(5×6 = 30)

## PART — C

(Maximum marks : 60)

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

## UNIT — I

- III (a) Explain the basic structure and properties of an optical fibre. 9  
 (b) Describe the terms total internal reflection and acceptance angle. 6

OR

- IV (a) Explain various types of optical fibres based on transmission mode and refractive index profile. 10  
 (b) Describe different types of fibre materials. 5

## UNIT — II

- V (a) Describe the theory and working principle of LASER. 9  
 (b) Explain the working of avalanche photo diode. 6

OR

- VI (a) Explain the working of PIN photo diode. 8  
 (b) Describe the modulation process in LED. 7

## UNIT — III

- VII (a) Explain the block diagram of optical transmitter. 8  
 (b) Explain the working principle of EDFA. 7

OR

- VIII (a) Explain the block diagram of basic optical communication system. 8  
 (b) Explain the block diagram of optical receivers. 7

## UNIT — IV

- IX (a) Explain the methods of measurement of attenuation in optical fibres. 8  
 (b) Describe the working principle and application of directional coupler. 7

OR

- X (a) Explain the working and advantage of optical circulator. 8  
 (b) Describe scattering losses in optical fibre. 7
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