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(Revision – 2015/19)

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Reg. No……
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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE, NOVEMBER – 2023

OPTICAL FIBRE COMMUNICATION

[Maximum Marks: **100**] [Time: **3** Hours]

PART-A

[Maximum Marks: **10**]

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

1. Define acceptance angle of a fibre.
2. List any two optical detectors.
3. List any two optical amplifiers.
4. Define splicing.
5. Define dispersion. (5 x 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 an optical fibre.
2. Explain the theory of laser action with diagram.
3. Compare PiN and Avalanche photodiode.
4. Describe wavelength division multiplexing with a diagram.
5. Explain the concept of optical amplifier.
6. Explain a optical circulator.
7. Explain the absorption losses in optical fibers. (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 the principle of light transmission through a fibre. (8)

b. Describe the ray types in optical fibre. (7)

OR

IV. a. Explain various types of fibre materials. (8)

b. Derive the expression of numerical aperture of a fiber. (7)

UNIT – II

V. a. Explain the LASER diode structure. (8)

b. Explain the principle of photo detection. (7)

OR

VI. a. Explain the structure and working principle of avalanche photodiode. (8)

b. Compare surface emitting and edge emitting LEDs. (7)

UNIT- III

VII. a. Draw and explain the block diagram of basic optical communication system. (9)

b. Draw and explain the block diagram of optical receivers. (6)

OR

VIII. a. Draw and explain the block diagram of optical transmitter. (9)

b. Compare SOA and EDFA. (6)

UNIT - IV

IX. a. Explain the methods of measurement of attenuation in optical fibers. (8)

b. Explain about beam splitter used in optics. (7)

OR

X. a. What are optical directional couplers? List the applications of directional couplers. (8)

b. Compare inter modal and intra modal dispersion of fiber. (7)

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