TED (15) – 5045

Reg. No. .....

(REVISION – 2015)

Signature .....

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE — APRIL, 2019

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. State the principle of Total internal reflection.
2. Name two types of LED structures.
3. List different types of optical amplifiers.
4. List major elements of optical fiber communication system.
5. List the applications of optical isolators. (5×2 = 10)

PART — B

(Maximum marks : 30)

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

1. Explain meridional and skew rays.
2. List the advantages of optical fiber communication system.
3. Explain the principle of photodetection.
4. Explain modulation process in LED.
5. Draw the block diagram of optical receiver.
6. Explain star couplers.
7. List the requirements of a good connector. (5×6 = 30)

Marks

PART — C

(Maximum marks : 60)

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

UNIT — I

III (a) Explain step index and graded index fibers. 10

(b) Explain the elements of physical optics. 5

OR

IV (a) Explain different modes and configurations of fiber optic transmission. 8

(b) Describe different types of fiber materials. 7

UNIT — II

V (a) Explain the working principle of Surface emitting LED. 8

(b) Explain the principle of Avalanche photodiode. 7

OR

VI (a) Explain the construction and working of LASER diode. 8

(b) Describe PIN photodiode. 7

UNIT — III

VII (a) Explain the block diagram of optical transmitter. 8

(b) Explain the working principle of Semiconductor optical amplifier. 7

OR

VIII (a) Explain the block diagram of optical fiber communication system. 9

(b) Explain the principle of wavelength division multiplexing. 6

UNIT — IV

IX (a) Explain different methods of measuring attenuation losses in optical fiber. 9

(b) Explain the working principle of optical modulators. 6

OR

X (a) Explain different splicing techniques used in OFC system. 8

(b) Describe optical circulators. 7