

Code: EC7T1

**IV B.Tech - I Semester – Regular/Supplementary Examinations  
October - 2018**

**OPTICAL COMMUNICATIONS  
(ELECTRONICS & COMMUNICATION ENGINEERING)**

Duration: 3 hours

Max. Marks: 70

**PART – A**

Answer *all* the questions. All questions carry equal marks

11 x 2 = 22

1.

- a) Write the Snell's law.
- b) Differentiate between Step index and Graded index fibers.
- c) What is 'Microbend loss'?
- d) What is 'Fusion splicing'?
- e) Draw the structure of 'Optical Resonator Cavity'.
- f) Write the working principle of 'LASER'.
- g) Define the term 'External quantum efficiency'.
- h) Write about 'Sensitivity' of a photo detector.
- i) What is 'Attenuation'?
- j) Write about 'SONET'.
- k) Write the uses of Repeaters in optical fiber communication system.

## PART – B

Answer any **THREE** questions. All questions carry equal marks.

$$3 \times 16 = 48$$

2. a) Describe in detail about different modes in Cylindrical fibers. 8 M
- b) Define ‘Total Internal Reflection’ and ‘Acceptance angle’ in ray optics. 4 M
- c) Explain various advantages of optical fiber communication. 4 M
3. a) Explain about various Dispersion losses which occur in Optical fiber communication. 8 M
- b) Describe in detail about: 8 M
- i) Different Misalignments in fibers
  - ii) Joint losses occur in Single mode and Multimode fibers.
4. a) Explain about construction and working of Double Hetrojunction LED. 8 M
- b) Describe in detail about Optical emission from semiconductors. 8 M

5. a) Explain the construction and operation of semi conductor Photodiode. 8 M
- b) Discuss the terms: 8 M
- i) Absorption
  - ii) Responsitivity
  - iii) Derive the expression for quantum efficiency.
6. a) Describe the working principle and operation of OTDR. 8 M
- b) Explain about Interferometric method of measurement of Refractive Index. 8 M