Roll No. | | | | | | | | | | | | |

Total No. of Pages : 02

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M.Tech. (ECE) (2018 Batch) (Sem.–1)

OPTICAL COMMUNICATION SYSTEM

Subject Code : MTEC-PE2Y-18-5

M.Code : 75181

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. Attempt any FIVE questions out of EIGHT questions.
2. Each question carries TWELVE marks.

Q1 a) Explain acceptance angle, critical angle and attenuation in optical fibre. 6

b) List all the basic components of a fiber optic cable and explain their functions. 6

Q2 a) Differentiate between step-index and graded index fiber. Explain mode field diameter (MFD) of a single mode fiber. 6

b) Explain the outside vapour phase oxidation fiber fabrication method. 6

Q3 a) Distinguish between spontaneous and stimulated emission. Why indirect band gap material is used for manufacturing LED's? 6

b) Draw the energy band diagram of LED diode. 6

Q4 a) What are the different types of noises present in the photodetector? Also, derive the expression for signal-to-noise ratio at the output of an optical receiver. 8

b) Explain the power-current characteristic of LED. 4

Q5 a) Explain fusion and mechanical splicing techniques used in optical fiber splicing. 6

b) What is WDM and list the reasons for its development as a major communication technology? 6

Q6 Explain in detail :

a) Scattering 2

b) Numerical aperture measurement 4

c) Semiconductor and Erbium doped fiber amplifiers 6

Q7 a) Explain optical OFDM. Why OFDM is needed to be in conjunction with optical communication? 6

b) Explain the classification of a photo-detector based on intrinsic and extrinsic process. 6

Q8 a) Explain the problems associated with the optical OFDM. 6

b) Explain peak-to-average power ratio and the methods to minimize it. 6

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.