

Optical Communication

Time : Three Hours    Maximum Marks: 100    Minimum Pass Marks :35

Note : 1 Attempt one question from each Unit 2. All questions carry equal marks.

UNIT 1

- 1) a) **With the help of ray theory analysis explain the variation of acceptance angle and numerical aperture of the fiber. Also derive their expressions.**  
b) Explain the method of plasma activated fabrication of optical fiber.

OR

- 2) a) Explain what do you understand by phase and group velocity of the signal transmitted in fiber,  
b) Compare step index and graded index fiber on their performance parameters.

UNIT-II

- 3) a) Discuss the following terms:  
i) Spontaneous emission  
ii) Stimulated emission  
iii) Population inversion  
b) Explain the fiber splicing using fusion method.

OR

- 4) a) Discuss the principle working of Distributed feedback laser.  
b) How can the power launching efficiency be increased.

UNIT-III

- 5) a) Determine the expression of quantum efficiency of photo detectors.  
b) Explain intra modal dispersion in optical fibers. OR  
6) a) Discuss about the characteristics of multiplication noise in APD.  
b) Discuss different types of linear scattering losses in optical fiber. UNIT-IV

- 7) a) Discuss how eye pattern is used to determine the additive noise.  
b) Discuss about the multi channel transmission techniques. OR  
8) a) Discuss the rise time budget used for designing the link,  
b) Discuss the working of burst mode receivers. UNIT-V  
9) a) Discuss the working of isolators and circulators.  
b) Discuss the principle working of OTDR.

OR

- 10) Write short notes on the following:  
a) Optical amplifiers  
b) Chromatic dispersion compensator.