C **Reg. No. :** | | | | | | | | | | |

Question Paper Code: 57402

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2019

Seventh Semester

Electronics and Communication Engineering

15UEC702 - OPTICAL COMMUNICATION AND NETWORKS

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

1. In an optical fiber the concept of numerical aperture is applicable in describing the ability of _____. CO1- R

   (a) Light dispersion (b) Light Polarization (c) Light Collection (d) Light Scattering

2. What is the typical value of refractive index of air? CO2- R

   (a) 1.5 (b) 1.0 (c) 2.3 (d) 2.0

3. What is the light amplification process used for the laser beam formation? CO3- R

   (a) Spontaneous emission (b) Stimulated emission

   (c) Both a and b (d) None of the above

4. Which component of an optical receiver is a linear frequency shaping filter used for the compensation of signal distortion and Inter Symbol Interference (ISI)? CO4- R

   (a) Photo Detector (b) Amplifier (c) Equalizer (d) None of the above

5. Which of the following is not related to Kerr effects? CO5- R

   (a) Self-Phase modulation (b) Cross-phase modulation

   (c) Four wave mixing (d) Stimulated Raman Scattering

PART – B (5 x 3= 15 Marks)

6.	What are step index and graded index fibers?		CO1 R
7.	What is Rayleigh scattering?		CO2 R
8.	Differentiate LEDs and Laserdiodes.		CO3 R
9.	What is intersymbol interference (ISI)?		CO4 R
10.	What is SONET?		CO5 R

PART – C (5 x 16= 80Marks)

11.	(a)	Discuss the mode theory of circular waveguides.	CO1- U	(16)
		Or		
	(b)	Explain ray optics in detail.	CO1- U	(16)
12.	(a)	Describe in detail about the signal distortion in optical waveguide.	CO2- U	(16)
		Or		
	(b)	Analyze the two types of connectors with suitable diagrams.	CO2- U	(16)
13.	(a)	Write a detailed note on the Laser diode modes.	CO3- U	(16)
		Or		
	(b)	Write in detail about avalanche photodiodes and explain briefly about photo detector noise and SNR.	CO3- U	(16)
14.	(a)	Explain the error sources of fundamental receiver operations.	CO4- Ana	(16)
		Or		
	(b)	Analyze the fiber numerical aperture measurements with suitable set up.	CO4- Ana	(16)
15.	(a)	Discuss the operational principles of WDM and its key features.	CO5- U	(16)
		Or		
	(b)	Explain in detail about SONET/SDH optical networks.	CO5- U	(16)