Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME – SEMESTER II (OLD) – • EXAMINATION – SUMMER 2016

Subject Code: 1710405 **Date:19/05/2016**

Subject Name: Fiber Optics Communication

Time:10:30 am to 01:00 pm **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	What is Fiber Optic Communication system? Draw and explain block diagram of fiber optics communication system and justify why fiber optics system is suitable for long distance communication.	**07**
	(b)	What do you means by index of fiber and give classification of fiber on the basis of index and write its comparisons.	**07**
Q.2	**(a)**	What do you mean by signal degradation? List the types of signal degradation and explain any two of them.	**07**
	(b)	A photo diode constructed of material having band gap energy of 1.43eV at 300 K. Find the longest cut off wave length.	**07**
		OR	
	(b)	When 1600 photons per second are incident on a p-i-n photo diode operating at a wave length of 1.3 µm, they generates on average 1100 electrons per seconds which are collected. Find the responsivity of the device.	**07**
Q.3	**(a)**	What is the pulse broadening? Discuss it for the graded index fiber also explain mode coupling?	**07**
	(b)	Explain following term (1) Material dispersion. (2) Quantum Noise. (3) Mode field Diameter.	**07**
		OR	
Q.3	**(a)**	Draw and explain the structure of Distributed Feedback laser. Also write its application and advantages.	**07**
	(b)	Describe basic concept of LASER. Also properly explain absorption and emission of radiation in LASER.	**07**
Q.4	**(a)**	List different types of LED used in the fiber optics communication and explain any one of them with detail structural diagram.	**07**
	(b)	With the help of required equation formula and figure properly explain the efficiency of LED.	**07**
		OR	
Q.4	**(a)**	List all measuring technics used in fiber optics system and explain OTDR method with required sketches	**07**
	(b)	What is splicing? List the technics available for splicing and explain any of them in detail.	**07**
Q.5	**(a)**	List different types of directional coupler used in the fiber and explain any one of them in detail.	**07**
	(b)	List different types of optical switches used in the fiber and explain any one of them in detail.	**07**
		OR	
Q.5	**(a)**	Properly explain the concept of optical amplifier. Also explain EDFA with required sketches.	**07**
	(b)	Properly explain the concept of WDM	**07**

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