Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
ME - SEMESTER–1 (NEW) EXAMINATION – WINTER 2018

Subject Code: 3710509   **Date: 03/01/2019**
Subject Name: Optical Networks
Time: 02:30 PM To 05:00 PM   **Total Marks: 70**

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

Q.1	**(a)**	Draw and describe SONET/SDH layers.	**07**
	(b)	Discuss how by providing networking functions within the optical fiber, significant cost saving is achieved.	**07**
Q.2	**(a)**	Explain the major functions of optical cross connects (OXC) in optical networks.	**07**
	(b)	Explain the principle of operation of Febri Perot filter and Mach Zehnder Interferometer (MZI).	**07**
		OR	
	(b)	Mention the key characteristics of optical filters. Explain the principle of operation of Bragg Gratings.	**07**
Q.3	**(a)**	Discuss the main consideration in building large optical switches. Compare different switch architectures in terms of number of switches, maximum loss, minimum loss and non blocking type.	**07**
	(b)	Describe the frame structure for SONET with diagram.	**07**
		OR	
Q.3	**(a)**	Explain the function and the principle of operation of wavelength converters.	**07**
	(b)	Draw following optical switch architectures: (a) Crossbar switch (b) Spanke architecture.	**07**
Q.4	**(a)**	Illustrate the role of optical add/drop multiplexers in WDM networks. Also, draw different OADM architectures.	**07**
	(b)	Define Routing and Wavelength Assignment (RWA). Explain various routing and wavelength assignment methods.	**07**
		OR	
Q.4	**(a)**	Discuss one example of Lightpath Topology Design (LTD) problem.	**07**
	(b)	What do you mean by Reconfigurable OADMs. Give examples of Reconfigurable OADM architectures with the help of neat diagrams.	**07**
Q.5	**(a)**	Briefly discuss two Statistical Dimensioning Models of wavelength routing networks.	**07**
	(b)	Explain in detail network management and protection architecture of SDH.	**07**
		OR	
Q.5	**(a)**	Draw different types of Self Healing Ring architectures and compare them.	**07**
	(b)	Explain how synchronization can be provided by Tunable Delays?	**07**

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