Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – II • EXAMINATION – SUMMER • 2014

Subject code: 1722701 **Date: 16-06-2014**

Subject Name: Optical Network

Time: 02:30 pm - 05:00 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)**	Describe optical layer: Line systems in Optical Network.	**07**
	(b)	Why protection in the optical layer required despite the existence of protection mechanisms in the client layers.	**07**
Q.2	**(a)**	You have to design a five-node ring network with a hub node and four remote nodes. Each remote node needs two wavelengths of traffic to/from the hub node on both sides of the ring; that is, you will need to dedicate two wavelengths to each remote node and terminate all the wavelengths at the hub node. You have to pick between two systems. The first system uses eight channels in two bands, each with four channels. It provides band OADMs, which can drop one out of the two bands. Once a band is dropped, all four wavelengths in the band have to be regenerated. A band OADM costs $20,000 and a single-channel regenerator costs $10,000. No optical amplifiers are required with this system. The second system also uses eight channels but has no bands. It provides SC-OADMs, which can drop any single wavelength. Each SC-OADM costs $10,000. For this system, two optical line amplifiers are required, each costing $30,000. Whose system would you select based on just equipment cost?	**07**
	(b)	Write short note on optical coupler.	**07**
		OR	
	(b)	Write short note on Chromatic Dispersion.	**07**
Q.3	**(a)**	Write short note on statistical traffic models.	**07**
	(b)	Explain Bidirectional Line-Switched Rings Protection in SONET/SDH.	**07**
		OR	
Q.3	**(a)**	Write short note on client models.	**07**
	(b)	Explain Unidirectional Path-Switched Rings Protection in SONET/SDH.	**07**
Q.4	**(a)**	Write short note on OADMs.	**07**
	(b)	Write short note on RAMAN amplifier.	**07**
		OR	
Q.4	**(a)**	Write short note on Bragg grating Multiplexer.	**07**
	(b)	Write short note on Optical Line Terminals.	**07**
Q.5	**(a)**	Write Short note on Storage area network.	**07**
	(b)	Write short note on Circuit switching and Packet switching.	**07**
		OR	
Q.5	**(a)**	Write Short note on SONET/SDH.	**07**
	(b)	Write short note on optical Switch Technologies.	**07**

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