Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI (NEW) - EXAMINATION – SUMMER 2017

Subject Code: 2161009 **Date: 08/05/2017**

Subject Name: Telecommunication Switching and Applications

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.**

			MARKS
Q.1		**Short Questions**	**14**
	1	Define Centum call second and CM. how it is related with Erlang.	
	2	Define folded and non-folded switch.	
	3	Draw and explain Dial tone and Busy tone.	
	4	Write difference between Micro-programmed control and hard-wired control unit in distributed control system.	
	5	Explain traffic handling capacity and equipment utilization factor.	
	6	How enhanced service Call forwarding works?	
	7	Define system and subsystem in ISO-OSI model.	
	8	What is singing? How to reduce its effect?	
	9	What is STD and ISD?	
	10	Explain function of token passing ring.	
	11	Briefly explain Concentrator expander technique for dispersed subscribers.	
	12	Define CCR and BHCA for telephone traffic.	
	13	Given that MTBF = 2000 hours and MTTR = 4 hours, Calculate the unavailability of single and dual processor systems in hours for 30 year period.	
	14	What is ISDN?	
Q.2	**(a)**	List out the factors limiting subscriber loop length. Discuss the solution to overcome the limitations.	**03**
	(b)	What is side tone? How it is essential for telephone circuit? Explain half duplex telephone circuit with side tone coupling.	**04**
	(c)	Draw the three-stage non-blocking space division switching network and derive minimum number of switching elements for the non-blocking three-stage network.	**07**
		OR	
	(c)	Explain Line finder and selector hunter approach for pre selector in strowger switching system.	**07**
Q.3	**(a)**	Explain various modes of dual processer configuration in centralized SPC.	**03**
	(b)	Explain 6 X 6 cross bar non-blocking switch. Estimate the number of cross points required to design non-blocking cross bar exchange that supports 500 local users.	**04**
	(c)	Explain functionality of two stage TS switch. Justify two stage TS switch is blocking.	**07**

OR

Q.3	**(a)**	Explain exchange functions BORSCHT.	**03**
	(b)	A 3-stage network is designed with the following parameters: M=N= 512, p = q = 16 and $\alpha = 0.7$. Calculate the blocking probability of the network if (a) s = 16, (b) s = 24, and (c) s = 31 using the Lee equation.	**04**
	(c)	With block diagram explain basic Time multiplex time switch	**07**
Q.4	**(a)**	Explain working principle of touch tone dial telephone	**03**
	(b)	Define echo. Propose the solution to reduce echoes within limit.	**04**
	(c)	Briefly describe Birth death process in terms of telephone traffic. Derive the equation for Poisson arrival of telephone traffic.	**07**

OR

Q.4	**(a)**	Calculate the maximum access time that can be permitted for the data and control memories in a TSI switch with a single input and single output trunk multiplexing 2500 channels. Also estimate the cost of the switch and compare it with that of a single stage space division switch.	**03**
	(b)	Describe the terms of GOS (Grade of Service) and blocking probability. Also explain how both the terms are different with suitable example.	**04**
	(c)	Classify signaling techniques. Briefly explain each class and subclass of signaling techniques.	**07**
Q.5	**(a)**	Explain Videotex service.	**03**
	(b)	Discuss functionality of Link to link layers of OSI model.	**04**
	(c)	How data traffic differs then voice traffic? Write short note on switching techniques for data transmission.	**07**

OR

Q.5	**(a)**	Briefly explain LCR system for telephone traffic.	**03**
	(b)	What is LAN? Discuss various LAN topologies.	**04**
	(c)	Classify ISDN services. Explain segregated ISDN architecture.	**07**

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