GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–VI (NEW) EXAMINATION – WINTER 2018

Subject Code:2161103   Date:27/11/2018

Subject Name:Telecommunication Switching systems and 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 marks.

Q.1	**(a)**	A fully connected network supports full duplex communication using unidirectional links. Show that the total number of links in such a network with n node, is given by $2 *^{n}C_2$.	**03**
	(b)	Explain side tone coupling circuit and it's importance in telephone.	**04**
	(c)	Discuss briefly about single termination and multi termination switch board in telecommunication.	**07**
Q.2	**(a)**	Discuss briefly about cross point matrix and it's importance in connection making between called and calling user in telephone system.	**03**
	(b)	Explain the working of Touch-tone dialing keypad in telephone.	**04**
	(c)	Explain briefly the concept of Common Control Switching (CCS) in telecommunication	**07**

OR

	(c)	Explain Crossbar switching matrix in detail with block diagram.	**07**
Q.3	**(a)**	State the difference between Microprogrammed and Hard-wired control scheme in telephone switching.	**03**
	(b)	Derive the formula for availability and non-availability of processor in single and dual processor case.	**04**
	(c)	Discuss centralized Stored Programmed Control (SPC) with standby, Synchronous duplex and load sharing mode of dual processor.	**07**

OR

Q.3	**(a)**	State the difference between single stage and multi-stage network.	**03**
	(b)	Discuss two stage space switching network with block diagram, number of total switching elements and switching capacity.	**04**
	(c)	Describe briefly about distributed SPC with the Level-1, Level-2 and Level-3 processing and their individual functionality assigned.	**07**
Q.4	**(a)**	A subscriber makes three phone calls of 3 minutes, 4 minutes and 2 minutes duration in a one-hour period. Calculate the subscriber traffic in Erlangs, CCS (Centum Call second) and CM (call minutes).	**03**
	(b)	Discuss Time-multiplexed space switching with proper diagram.	**04**
	(c)	State the difference between Markov process, Birth-Death process and Poisson process with proper insight and examples.	**07**

OR

Q.4	**(a)**	Over a 20 minute observation interval, 40 subscribers initiate calls. Total duration of the calls is 4800 seconds. Calculate the load offered to the network by the subscribers and the average subscriber traffic.	**03**
	(b)	Explain combinational switching with two-stage Time-Space (TS) switching concept.	**04**
	(c)	Derive the formula to find the blocking probability for lost call cleared system with infinite sources.	**07**

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Q.5 **(a)** State the difference between In-channel and Common Channel Signaling **03**
(b) Discuss briefly about circuit switching in telecommunication. **04**
(c) Shed the light on data transmission in Public Switching Telephone Network **07**
(PSTN).

OR

Q.5 **(a)** Discuss about Local Area Network (LAN) and it's various topologies. **03**
(b) Describe Packet Switching in telecommunication in brief. **04**
(c) Explain in depth about various modes of communication at present. **07**

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