GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–VII EXAMINATION – SUMMER 2025

Subject Code:3173212   **Date:19-05-2025**
Subject Name:Telecommunication Engineering
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.**
4. **Simple and non-programmable scientific calculators are allowed.**

			Marks
Q.1	**(a)**	Compare Packet switching & Circuit Switching.	**03**
	(b)	Explain centralized SPC and also explain the drawback of it.	**04**
	(c)	Explain Markov chain and Birth death process in detail with blocking probability.	**07**
Q.2	**(a)**	Explain output-controlled time division space switch	**03**
	(b)	Given that MTBF = 2000 hrs and MTTR = 4 hrs. Calculate the unavailability for single and dual processor systems for 10 years and 30 years..	**04**
	(c)	Explain level 1 processing and level 2 processing of distributed SPC in detail.	**07**
		OR	
	(c)	Discuss Single stage Vs Multistage Network with example	**07**
Q.3	**(a)**	Define Erlang, BHCA and Grade of service.	**03**
	(b)	A three-stage switching structure is to accommodate N = 128 input and 128 output terminals. For 16 first stage and 16 last stages, determine the number of cross points for nonblocking	**04**
	(c)	Explain the N X N three stage switching network. Draw the Lee's graph to discuss its blocking probability.	**07**
		OR	
Q.3	**(a)**	During a busy hour, 1400 calls were offered to a group of trunks and 14 calls were lost. The average call duration has 3 minutes. Find (1) Traffic offered (2) Traffic carried (3) GOS	**03**
	(b)	An exchange serves 4000 subscribers. If the average BHCA is 24000 and the CCR is 50%, calculate the busy hour calling rate	**04**
	(c)	Discuss in detail about LCC system with finite subscribers with derivation of blocking probability and GOS	**07**
Q.4	**(a)**	Write a short note on Vocoder	**03**
	(b)	Write a short note on DMS 100.	**04**
	(c)	Describe satellite-based data networks in detail	**07**
		OR	

Q.4	**(a)**	What are the broad categories of the enhanced services?	**03**
	(b)	Explain 5ESS switching system.	**04**
	(c)	Describe fiber optic networks in detail.	**07**

Q.5	**(a)**	Describe Right-through routing	**03**
	(b)	Draw and explain the basic scheme for Common Channel Signaling.	**04**
	(c)	Write short note on numbering plan for Telecommunication.	**07**

OR

Q.5	**(a)**	Compare in band and out band Signaling	**03**
	(b)	Explain subscriber loop system.	**04**
	(c)	Discuss the architecture of signaling system No.7	**07**

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