

# GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VI(NEW) – EXAMINATION – SUMMER 2019

**Subject Code:2161103**

**Date:16/05/2019**

**Subject Name:Telecommunication Switching systems and Networks**

**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.

		<b>MARKS</b>
<b>Q.1</b>	(a) Define (1) Erlang (2) Transit Exchange (3) Grade of service	<b>03</b>
	(b) Draw and explain simplex and half-duplex telephone circuits with necessary equations.	<b>04</b>
	(c) Explain elements of switching system with diagram.	<b>07</b>
<b>Q.2</b>	(a) For a network with point to point link, calculate number of links (L) required connecting 50 nodes?	<b>03</b>
	(b) Given that MTBF= 3000 hours and MTTR = 5 hours. Calculate the unavailability for single and dual processor systems.	<b>04</b>
	(c) Explain two stage blocking network and derive the equation for blocking probability.	<b>07</b>
	<b>OR</b>	
	(c) Explain Clos Network in detail.	<b>07</b>
<b>Q.3</b>	(a) Explain interrupt processing function of control subsystem in exchange.	<b>03</b>
	(b) Compare: Micro-programmed control vs. Hard-wired control	<b>04</b>
	(c) Discuss basic time division space switching with necessary switch configurations	<b>07</b>
	<b>OR</b>	
<b>Q.3</b>	(a) A central battery exchange is powered with 48 V batteries. The carbon microphone requires a minimum of 24mA as energizing current. The battery has a 400 ohms resistance in series for short circuit protection. The d.c. resistance of microphone is 50 ohm. If the cable used for subscriber lines offer a resistance of 50 ohms/km, determine the maximum distance at which a subscriber station can be located.	<b>03</b>
	(b) Compare Inchannel and Common Channel Signaling	<b>04</b>
	(c) Discuss Markov and Birth-death processes in detail.	<b>07</b>
<b>Q.4</b>	(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 and CM.	<b>03</b>
	(b) Compare Satellite and Terrestrial Communication	<b>04</b>
	(c) Discuss network architecture of ISDN.	<b>07</b>
	<b>OR</b>	
<b>Q.4</b>	(a) An exchange serves 5000 subscribers. If the average BHCA is 20,000 and the CCR is 50%, calculate the busy hour calling rate.	<b>03</b>
	(b) Discuss about various diversity schemes in communication system.	<b>04</b>
	(c) Which factors limits the subscriber loop length? Explain in brief how to overcome this limitations	<b>07</b>

- Q.5** (a) Define connection oriented and connection less protocol. **03**  
(b) Write a Short note on EPABX **04**  
(c) With reference to data networks, explain with flow chart the operation of simple ARQ Protocol. **07**
- OR**
- Q.5** (a) Compare Circuit switching vs. Packet switching **03**  
(b) Draw the flow chart for p-persistence CSMA protocol **04**  
(c) Explain Briefly layered architecture of OSI model. **07**

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