

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER-VII (NEW) EXAMINATION – WINTER 2024****Subject Code:3173212****Date:04-12-2024****Subject Name: Telecommunication Engineering****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.
4. Simple and non-programmable scientific calculators are allowed.

		MARKS
Q.1	(a) Explain sampling theory with example and diagram.	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) How single stage switching is different from multi stage switching in telecommunication system.	07
Q.2	(a) Explain the operations of standby mode and synchronous duplex mode of stored program control.	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) List the various signaling techniques & explain the architecture of SS7.	07
	OR	
	(c) Explain the N X N three stage switching network with Lee's graph.	07
Q.3	(a) Draw and explain the basic scheme for common channel signalling.	03
	(b) Explain input-controlled time division space switch with proper diagram.	04
	(c) Explain pulse code modulation system used for speech communication.	07
	OR	
Q.3	(a) Explain Time Slot Interchange switch (TSI) with suitable diagrams.	03
	(b) Explain centralized and distributed switching with examples.	04
	(c) Explain in detail LCC system with finite subscribers.	07
Q.4	(a) Define: Erlang, Time Consistent Busy Hour, and Grade of service.	03
	(b) What are the broad categories of the enhanced services?	04
	(c) Compare level 3, level 2 and level 1 processing.	07
	OR	
Q.4	(a) In what way is stored program control superior to hard wired control.	03
	(b) Discuss DMS-100 switching system with suitable diagrams.	04
	(c) Explain Time Multiplexed Space Switching with suitable diagrams.	07

- Q.5** (a) Explain charging plans used in telecommunication system. **03**
(b) Explain VOCODER system in detail. **04**
(c) Differentiate between circuit switching and message switching. **07**
- OR**
- Q.5** (a) With the help of a bar graph, draw and explain typical telephone traffic pattern of an urban area on a working day and define different busy hours. **03**
(b) Explain subscriber loop system in detail. **04**
(c) Discuss Birth-death processes in detail with example and derivation of blocking probability for N stage. **07**
