

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VI (NEW) EXAMINATION – SUMMER 2023****Subject Code:2161103****Date:10-07-2023****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.
4. Simple and non-programmable scientific calculators are allowed.

- Q.1** (a) Discuss about a telephone circuit with side-tone coupling. **03**
 (b) Give classification of Switching systems. **04**
 (c) Briefly describe all the elements of manual switching circuit. **07**
- Q.2** (a) Discuss briefly about cross point matrix and its importance in connection making between called and calling user in telephone system. **03**
 (b) Explain different Network Topology. **04**
 (c) Explain Lost calls cleared (LCC) system with infinite sources and derive the equation of Blocking probably. **07**
- OR**
- (c) Explain touch tone dial telephone & its receiver scheme. **07**
- Q.3** (a) State the difference between single stage and multistage stage space division switching. **03**
 (b) Derive the formula for availability and non-availability of processor in single and dual processor case. **04**
 (c) Draw the block diagram of two stage network with multiple switching matrices in each stage and explain it. Also derive equations of switching elements required, switching capacity and Blocking probability. **07**
- OR**
- Q.3** (a) State the difference between Micro-programmed and Hard-wired control scheme in telephone switching. **03**
 (b) Explain Time Multiplexed space switching with proper diagram. **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) Explain Bit stuffing related to data Link Layer. **03**
 (b) Explain Ionospheric communication in a detail. **04**
 (c) Derive the formula to find the blocking probability for lost call cleared system with infinite sources. **07**
- OR**
- Q.4** (a) Discuss about various diversity schemes in communication system. **03**
 (b) Explain combinational switching with two-stage Time-Space (TS) switching concept. **04**
 (c) Explain following processes with respect to telephone communication. **07**
 1. Birth-Death(B-D) Process
 2. Renewal Process
 3. Poisson Process.
- Q.5** (a) Define connection oriented and connection less protocol. **03**
 (b) Explain B and D channels of ISDN. What is the significance and data rate of B and D channels? **04**
 (c) Write short notes on ISDN Network. **07**

OR

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| Q.5 | (a) | Explain mesh topology with its advantages and disadvantages. | 03 |
| | (b) | Describe Packet Switching in telecommunication in brief. | 04 |
| | (c) | Explain pure ALOHA in detail and derive the equation of Throughput. | 07 |
