

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER- VI (New) EXAMINATION – WINTER 2019

Subject Code: 2161103

Date: 09/12/2019

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) Classify the switching systems. **03**
 - (b) Draw and explain simplex telephone circuit with necessary equations. **04**
 - (c) Draw and explain two stage network with multiple switching matrices in each stage. Also derive the equation of blocking probability. **07**
- Q.2**
- (a) Compare electromechanical switching system with electronic switching system. **03**
 - (b) Derive the formula for availability and unavailability of microprocessor for single as well as dual processor system. **04**
 - (c) Draw and explain selector hunter and line finder based subscriber access approaches used in step by step Strowger switching system. **07**
- OR**
- (c) Draw diagram for three stage switching network and using Lee's graph, derive the equation of blocking probability. **07**
- Q.3**
- (a) Define following terms: **03**
 - (i) Peak Busy Hour
 - (ii) Busy Hour Call Attempts (BHCA).
 - (iii) Busy Hour Calling Rate (BHCR)
 - (b) Write short not on Lost calls Hold system. **04**
 - (c) Draw the diagram for Input controlled time division space switching and explain it in detail. **07**
- OR**
- Q.3**
- (a) Define following terms: **03**
 - (i) Call Completion Rate (CCR)
 - (ii) Traffic Intensity E.
 - (iii) Grade of Services (GOS)
 - (b) Write short not on Lost calls returned system. **04**
 - (c) Draw the diagram of Time multiplexed Space Switch and explain it in detail. **07**
- Q.4**
- (a) Explain channel association signaling with necessary diagram. **03**
 - (b) Explain folded and non-folded network. **04**
 - (c) Explain Birth Death Process in detail with state transition. **07**
- OR**
- Q.4**
- (a) Enlist the difference between In-channel and Common Channel Signaling. **03**
 - (b) Write short note on ionospheric communication. **04**
 - (c) What are the advantages of Hierarchical Networks? Discuss the 5-level switching hierarchy recommended by CCITT. **07**
- Q.5**
- (a) Draw ISDN Address structure. What is the significance and size of each field. **03**
 - (b) Explain B and D channels of ISDN. What is the significance and data rate of B and D channels? **04**
 - (c) Explain slotted ALOHA in detail and derive the equation of Throughput. **07**

OR

- Q.5 (a) Explain mesh topology with it's advantages and disadvantages. **03**
(b) Explain store and forward switching with necessary diagram. **04**
(c) Explain ISDN Functional grouping and Reference points in detail. **07**

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