Code No: **R164104B** **R16** **Set No. 1**

IV B.Tech I Semester Regular Examinations, October/November - 2019

ELECTRONIC SWITCHING SYSTEMS

(Electronics and Communication Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any FOUR questions from Part-B
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PART–A *(14 Marks)*

1. a) Numbering plan in a telephone network must be independent of call routing, Why? [3]
   b) Given that MTBF =2000hours and MTTR=4hours, calculate the unavailability for dual processor system. [2]
   c) Define switching capacity of the system. [3]
   d) Give the national and international telephone number structure. [2]
   e) Explain about Lost-call Systems. [2]
   f) What are the motivations for ISDN? [2]

PART–B *(4x14 = 56 Marks)*

2. a) What is the criterion for classifying Switching systems? What are the different classes of Switching systems? [7]
   b) A diagonal cross point matrix exchange supports 500 users. On an average 1000calls are put through every day. If the cross point contacts have a mean life of 10000 breaks and makes, estimate as to how often a cross point may be replaced in this exchange. [7]

3. a) With neat sketch explain the Process switching. [7]
   b) With relevant equations and diagram explain the three stage switching network. [7]

4. a) With neat sketch explain the serial in /serial out configuration of time multiplexed time switch. [7]
   b) In n-stage combination switching a tradeoff between blocking probability and time delay is possible. Explain. [7]

5. a) Give the comparisons between In-channel and Common channel signaling. [7]
   b) Explain the Architecture of SS7. [7]

6. a) Explain the Grades of service of link systems. [7]
   b) Write short notes on Traffic Measurement. [7]

7. a) With neat sketch explain the protocol architecture of ISDN. [7]
   b) Explain the interactive and distributive services of Broadband ISDN. [7]

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Code No: **R164104B** **R16** **Set No. 2**

IV B.Tech I Semester Regular Examinations, October/November - 2019

ELECTRONIC SWITCHING SYSTEMS

(Electronics and Communication Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any FOUR questions from Part-B
*****

PART–A *(14 Marks)*

1.	a)	What are the differences between common control and direct control?	[3]
	b)	Given that MTBF =2000hours and MTTR=4hours, calculate the unavailability for single processor system.	[2]
	c)	How the time division time switch may be controlled?	[3]
	d)	Define return loss.	[2]
	e)	What is meant by Grading?	[2]
	f)	What are the different forms of Videotex?	[2]

PART–B *(4x14 = 56 Marks)*

2.	a)	List six events that may occur in a telephone system and the corresponding actions that may have to be taken by the common control system.	[7]
	b)	Estimate the number of cross points required to design an exchange that supports 500 users on a nonblocking basis and 50 transit, outgoing or incoming calls simultaneously.	[7]
3.	a)	What are the different classes of application software? Explain.	[7]
	b)	Distinguish between single stage and multi stage space division networks.	[7]
4.	a)	Is TS network nonblocking? Explain.	[7]
	b)	With neat sketch explain the parallel in /serial out configuration of time multiplexed time switch.	[7]
5.	a)	With neat sketch explain basic schemes for CCS.	[7]
	b)	Discuss about Broadband Networks.	[7]
6.	a)	What is Strict- Sense non-blocking Networks? Explain.	[7]
	b)	Write short notes on Queuing Systems.	[7]
7.	a)	With neat sketch explain the network architecture of ISDN.	[7]
	b)	Discuss about Voice Data Integration.	[7]

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Code No: **R164104B** **R16** **Set No. 3**

IV B.Tech I Semester Regular Examinations, October/November - 2019

ELECTRONIC SWITCHING SYSTEMS

(Electronics and Communication Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any FOUR questions from Part-B
*****

PART–A *(14 Marks)*

1. a) List six events that may occur in a telephone system. [3]
   b) What are three modes that a dual processor architecture may be configured to operate in? [2]
   c) Define the blocking probability. [3]
   d) What factors limit the subscriber loop lengths? [2]
   e) What is meant by Call Packing? [2]
   f) What are the three fundamental channels in ISDN? [2]

PART–B *(4x14 = 56 Marks)*

2. a) A blocking crossbar switch is to be designed to support 1000 subscribers. If the eliminated peak traffic is 10earlangs with average holding times of three minutes per call, estimate the number of cross points required. [7]
   b) Explain the design considerations of Touch Tone Dial Telephone. [7]

3. a) List the characteristics of Electronic control schemes. [7]
   b) Determine the Switch advantage Ratio of a three stage network with N inlets and N outlets for the cases when (i) N=128 and (ii) N= 32768. [7]

4. a) Derive the expression for the blocking probability of a TSTS switch if each stage is individually nonblocking. [7]
   b) With neat sketch explain the parallel in /parallel out configuration of time multiplexed time switch. [7]

5. a) With neat sketch explain the telecommunication network topologies. [7]
   b) Explain the significance of Statistical Multiplexing with neat sketch. [7]

6. a) Discuss about Application of Graph Theory to link Systems. [7]
   b) Write short notes on Congestion. [7]

7. a) What are the two broad categories of ISDN services? Explain about lower layer service attributes. [7]
   b) Discuss about the ISDN Standards. [7]

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Code No: **R164104B** **R16** **Set No. 4**

IV B.Tech I Semester Regular Examinations, October/November - 2019

ELECTRONIC SWITCHING SYSTEMS

(Electronics and Communication Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any FOUR questions from Part-B
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PART–A *(14 Marks)*

1. a) Calculate the time taken to dial a 12 digit number in a DTMF telephone when the exchange is capable of receiving DTMF signals? [3]
   b) Define Switch advantage Ratio. [2]
   c) Calculate the access time of the memory modules in parallel in /serial out time switch using 64 input and 64 output streams with each stream multiplexing 32 channels. [3]
   d) What are the major elements of the telecommunication network? [2]
   e) What is Congestion? [2]
   f) What are the different categories of ISDN signaling? [2]

PART–B *(4x14 = 56 Marks)*

2. a) What are the elements of Switching systems? With neat sketch explain about each of the elements. [7]
   b) With neat sketch explain the differences between Blocking and nonblocking crossbar switch configurations. [7]

3. a) Give the structure of a redundantcentalised control and explain. [7]
   b) Determine the design parameters of a three stage switch with inlet utilization of 0.1 to achieve a PB=0.002 for (i)N= 128 (ii) N=2048. [7]

4. a) A 1000 inlet and 1000 outlet digital switch is to be built using TSI. Determine the size of the control and data memories, and the speeds with witch the memories have to be accessed. [7]
   b) With neat sketch explain the three stage combination switching. [7]

5. a) With neat sketch explain the cable Hierarchy for subscriber loops. [7]
   b) Distinguish between Local- Area and Wide- Area Networks [7]

6. a) Discuss about Sectionalized Switching Networks. [7]
   b) Write short notes on Rearrange-able Networks. [7]

7. a) Discuss about Expert Systems in ISDN. [7]
   b) With neat sketch explain ISDN address structure and example of ISDN addressing. [7]

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