SRM UNIVERSITY
FACULTY OF ENGINEERING AND TECHNOLOGY

SCHOOL OF ELECTRICAL AND ELECTRONICS ENGINEERING
DEPARTMENT OF TCE
COURSE PLAN

Course Code : TE1017
Course Title : Telecommunication Switching Methods
Semester : VI
Course Time : JANUARY – MAY 2016
Location : SRM Tech Park
Faculty Details

Section	Name	Office	Mail id
A	Mrs. C.Vimala	Tech Park 13th floor	vimala.c@ktr.srmuniv.ac.in

Required Text Books:

1. Bellamy John, "Digital Telephony", John Wily & Sons, Inc 4th end. 2010
2. Freeman R.L., Telecommunication System Engineering, Wiley Inter Science Publications ,4th edition 2004
3. Viswanathan. T, "Telecommunication Switching System and Networks", Prentice Hall of India Ltd., 1994
4. Flood J.I., Telecommunications Switching Traffic and Networks, Pearson Education Pvt.Ltd

Web Resources :

www.wikipedia.org,
www.scribd.com,
www.altavista.com

Prerequisite : Nil

Objectives:

1. To understand the operational characteristics of switching techniques.
2. To study the working principle of different Switching types.
3. To study the working principles of switching networks
4. To understand the working concept of Digital Subscriber Access.

Assessment Details

Cycle Test – I	:	10 Marks
Surprise Test	:	5 Marks
Cycle Test – II	:	10 Marks
Attendance	:	5 Marks
Model Exam	:	20 Marks

Test Schedule

S.No.	DATE	TEST	TOPICS	DURATION
1	27.02.2016	Cycle test- I	Unit – I	2 Periods
2	26.03.2016	Cycle test- II	Unit - II	2 Periods
3	28.04.2016	Model Exam	All 5 Units	3 Hrs

Outcomes

Students who have successfully completed this course

Course outcome	Program outcome
5. To understand the operational characteristics of switching techniques. 6. To study the working principle of different Switching types. 7. To study the working principles of switching networks 8. To understand the working concept of Digital Subscriber Access	a) Graduates will demonstrate knowledge of Switching methods, Queuing, Switching Networks. b) Graduates will demonstrate the ability to identify, formulate and network related problems c) Graduates will demonstrate the ability to design a system, component or process as per needs and specifications d) Graduates will show the ability to participate and try to succeed in competitive examinations.

Detailed Session Plan

MULTIPLEXING

Transmission Systems, Multiplexing and modulation, FDM,Time Division Multiplexing, Digital Transmission and Multiplexing: Pulse Transmission, Line Coding, Binary N-Zero Substitution, Digital Biphase, Differential Encoding, Time Division Multiplex Loops and Rings

Session No.	Topics to be covered	Time	Ref	Teaching Method	Testing Method
1	**MULTIPLEXING**	50	1	BB	Group discussion
2	Transmission Systems	50	1	BB	Self - test questions
3	FDM: Multiplexing and modulation	50	1	BB	Self -test questions
4	Time Division Multiplexing	50	1	BB	Brainstorming questions
5	Digital Transmission and Multiplexing: Pulse Transmission,	50	1	BB	Comparative study
6	Line Coding, Binary N-Zero Substitution,	50	1	BB	Self -test questions
8.	Digital Biphase, , Differential Encoding	50	1	BB	Self -test questions
9	Time Division Multiplex Loops and Rings	50	1	BB	Group discussion

DIGITAL SWITCHING

Switching Functions, Space Division Switching, Time Division Switching, two-dimensional switching: STS Switching, TST Switching, No.4 ESS Toll Switch, Digital Cross-Connect Systems, Digital Switching in an Analog Environment

10	**DIGITAL SWITCHING**	50	1	BB	Self -test questions
11	Switching Functions	50	1	BB	Review questions
12	Space Division Switching,	50	1	BB	Review questions
13	Time Division Switching	50	1	BB	Comparative study
14	two-dimensional switching: STS Switching	50	1	BB	Self -test questions
15	TST Switching	50	1	BB	Self -test questions
16	No.4 ESS Toll Switch	50	1	BB	Objective type questions
17	Digital Cross-Connect Systems	50	1	BB	Objective type
18	Digital Switching in an Analog Environment	50	1	BB	Discussion

CONTROL AND NETWORK SYNCHRONIZATION MANAGEMENT

Timing - Timing Recovery: Phase-Locked Loop, Clock Instability, Jitter Measurements, Systematic Jitter. Timing Inaccuracies: Slips, Asynchronous Multiplexing, Network Synchronization, Network Control, Network Management

19	**CONTROL AND NETWORK SYNCHRONIZATION MANAGEMENT**	50	1	BB	Group discussion Self test questions
20	Timing - Timing Recovery: Phase-Locked Loop,	50	1	BB	Self test questions

21	Clock Instability	50	1	BB	Group discussion
22	Jitter Measurements,	50	1	BB	Self test questions
23	Systematic Jitter	50	1	BB	Self test questions
24	Timing Inaccuracies: Slips,	50	1	BB	Self test questions
25	Asynchronous Multiplexing	50	1	BB	Objective type questions
26	Network Synchronization,	50	1	BB	Self test questions
2	Network Control	50	1	BB	Self test questions
27	Network Management	50	1	BB	Group discussion
DIGITAL SUBSCRIBER ACCESS ISDN: ISDN Basic Rate Access Architecture, ISDN U Interface, ISDN D Channel Protocol. High-Data-Rate Digital Subscriber Loops: Asymmetric Digital Subscriber Line, VDSL. Digital Loop Carrier Systems: Universal Digital Loop Carrier Systems, Integrated Digital Loop Carrier Systems					
28	**DIGITAL SUBSCRIBER ACCESS** ISDN: ISDN Basic Rate Access Architecture	50	1	BB	Brainstorming Group discussion
29	ISDN U Interface	50	1	BB	Self test questions
30	ISDN D Channel Protocol	50	1	BB	Self test questions
31	High-Data-Rate Digital Subscriber Loops:	50	1	BB	Self test questions
32	Asymmetric Digital Subscriber Line	50	1	BB	Self test questions
33	VDSL	50	1	BB	Self test questions
34	Digital Loop Carrier Systems: Universal	50	1	BB	Discussion
35	Digital Loop Carrier Systems	50	1	BB	Self test questions
36	Integrated Digital Loop Carrier Systems	50	1	BB	Discussion
TRAFFIC ANALYSIS Traffic Characterization: Arrival Distributions, Holding Time Distributions, Loss Systems, Network Blocking Probabilities: End-to-End Blocking Probabilities, Overflow Traffic, Delay Systems: Exponential service Times, Constant Service Times, Finite Queues					
37	**TRAFFIC ANALYSIS** Traffic Characterization: Arrival Distributions	50	1	BB	Self test questions
38	Holding Time Distributions	50	1	BB	Self test questions
39	Loss Systems	50	1	BB	Asking similar examples
40	Blocking Probabilities	50	1	BB	Self test questions
41	End-to-End Blocking Probabilities	50	1	BB	Objective type questions
42	Overflow Traffic	50	1	BB	Objective type questions
43	Delay Systems: Exponential service Times	50	1	BB	Objective type questions
44	Constant Service Times	50	1	BB	Objective type
45	Finite Queues	50	1	BB	Discussion