SARDAR RAJA COLLEGE OF ENGINEERING, RAJA NAGAR, ALANGULAM

DEPARTMENT OF COMPUTER APPLICATIONS

MICRO LESSON PLAN

SUBJECT :   COMPUTER NETWORKS

CODE   :   MC 9231

CLASS   :   II MCA / III SEM

STAFF: Mr. R.Sundar, Asst.Prof,

DEPT. OF MCA.

MC9231   COMPUTER NETWORKS   LT P C

                                                                    3 0 0 3

UNIT I   INTRODUCTION   9

Communication model – Data communications networking – Data transmission concepts
and terminology – Transmission media – Data encoding – Data link control.

UNIT II   NETWORK FUNDAMENTALS   9

Protocol architecture – Protocols – OSI – TCP/IP – LAN architecture – Topologies –
MAC – Ethernet, Fast Ethernet, Token ring, FDDI, Wireless LANS – Bridges.

UNIT III   NETWORK LAYER   9

Network layer – Switching concepts – Circuit switching networks – Packet switching –
Routing – Congestion control – X.25 – Internetworking concepts and X.25 architectural
models – IP – Unreliable connectionless delivery – Datagrams – Routing IP datagrams –
ICMP.

UNIT IV   TRANSPORT LAYER   9

Transport layer – Reliable delivery service – Congestion control – Connection
establishment – Flow control – Transmission control protocol – User datagram protocol.

UNIT V   APPLICATIONS   9

Applications – Sessions and presentation aspects – DNS, Telnet – rlogin, – FTP –
SMTP – WWW – Security – SNMP.

                                        TOTAL: 45 PERIODS

REFERENCES:

1. Larry L. Peterson & Bruce S. Davie, "Computer Networks – A systems Approach",
   Second   Edition,   Harcourt   Asia   /   Morgan   Kaufmann,   2000.

2. William Stallings, "Data and Computer Communications", Fifth Edition, PHI, 1997.

<div align="center">**SUBJECT DESCRIPTION AND OBJECTIVES**</div>

<u>DESCRIPTION</u>

Data communications, network architectures, communication protocols, data link control, medium access control; introduction to local area networks metropolitan area networks and wide area networks; introduction to Internet and TCP/IP.

Course Objectives: Upon completing the course, the student will:

1. Be familiar with the basics of data communication;

2. Be familiar with various types of computer networks;

3. have experience in designing communication protocols;

4. Be exposed to the TCP/IP protocol suite.

5. Process of networking research

6. Constraints and thought processes for networking research

7. Problem Formulation—Approach—Analysis— Results

8. Different from undergraduate networking (EECS 122)

9. i.e., training network programmers vs. training network researchers

10. Communication between applications on different computers

11. Must understand application needs/demands

12. Delay and loss sensitivity

13. Other application-support services

14. Overlays, Active Networks, Data-oriented.

15. Traffic data rate, pattern (bursty or constant bit rate), target (multipoint or single destination, mobile or fixed)

MICRO LESSON PLAN

Hours	LECTURE TOPICS	READING
UNIT I - INTRODUCTION		
1	Introduction	R1
2	Communication model	R1
3	Data communications networking	R1
4	Data transmission concepts	R1
5	Data transmission concepts and terminology	R1
6	Transmission media	R1
7	Data encoding	R1
8	Data encoding	R1
9	Data link control	R1
UNIT II - NETWORK FUNDAMENTALS		
10	Protocol architecture	R1
11	Protocols	R1
12	OSI-Open System Interconnection	R1
13	TCP/IP – Transmission Control Protocol / Internet Protocol	R1
14	LAN architecture	R1
15	Topologies	R1
16	MAC – Ethernet	R1
17	Fast Ethernet, Token ring	R1
18	FDDI, Wireless LANS – Bridges	R1
UNIT III - NETWORK LAYER		
19	Network layer	R1
20	Switching concepts	R1
21	Circuit switching networks	R1
22	Packet switching	R1
23	Routing	R1
24	Congestion control	R1
25	X.25 – Internetworking concepts and X.25 architectural models	R1
26	IP – Unreliable connectionless delivery	R1
27	Datagrams – Routing IP datagrams – ICMP	R1
UNIT IV - TRANSPORT LAYER		
28	Transport Layer	R1
29	Reliable delivery service	R1
30	Congestion control	R1
31	Connection establishment	R1
32	Flow control	R1
33	Transmission control protocol	R1
34	Transmission control protocol	R1
35	User datagram protocol	R1
36	User datagram protocol	R1

UNIT V APPLICATIONS

37	Applications	R1
38	Sessions and presentation aspects	R1
39	DNS – Domain Name System	R1
40	Telnet, rlogin	R1
41	FTP – File Transfer Protocol	R1
42	SMTP – Simple Mail Transfer Protocol	R1
43	WWW – World Wide Web	R1
44	Security	R1
45	SNMP – Simple Network Management Protocol	R1

Question Paper Code : 60712

M.C.A. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2012.

Third Semester

MC 9231/MC 931/600310 — COMPUTER NETWORKS

(Regulation 2009/2010)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1.   What is message formatting?

2.   Differentiate between guided and unguided transmission media.

3.   What are the layers of TCP/IP model of a network?

4.   Write down the functions of a bridge.

5.   What are the various routing strategies?

6.   Define datagram.

7.   What is flow control?

8.   Write down the functions of transport layer.

9.   What are the key elements of SNMP?

10. What is firewall?

PART B — (5 × 16 = 80 marks)

11. (a) (i)   Differentiate between circuit switching and packet switching.   (6)

          (ii) Explain the communication model in detail with suitable diagram.
                                                                              (10)

Or

     (b) Discuss in detail about the following transmission media
          (i)   Optical fiber   (6)
          (ii)   Coaxial cable   (5)
          (iii) Broadcast Radio.   (5)

12. (a) Describe the structure of OSI Reference model with suitable diagram. (16)

Or

(b) Discuss briefly about IEEE standard for Ethernet. (16)

13. (a) (i) Discuss in detail about packet switching principles and techniques. (10)

(ii) Explain : Congestion control in detail. (6)

Or

(b) (i) Explain in detail about Internet Protocol. (10)

(ii) Write a note on ICMP. (6)

14. (a) Describe Transmission Control Protocol in detail. (16)

Or

(b) (i) Explain how connections are established in the transport layer. (10)

(ii) Write notes on UDP and the internet transport protocol. (6)

15. (a) Explain about the Electronic mail using SMTP. (16)

Or

(b) What is DNS? Explain how Domain Naming Service is provided. (16)

———————

Time: Three hours   Maximum: 100marks

Answer ALL questions

PART A (10*2=20marks)

1. What are the three necessary criteria for an efficient network?

2. Mention the responsibilities of Network layer.

3. What are the categories of Network based on its size?

4. How is the preamble field different from the start frame delimeter?

5. Which class of IP address is used for unicast and multicast communication?

6. What is the purpose of NAT?

7. List some uses of UDP.

8. What is socket address?

9. If 20 people need to communicate using symmetric key cryptography,

   How many keys are needed?

10. Which protocol support E-mail on the internet? What are two parts of E-mail?

PART B (50*16=80marks)

11.(a) How do layers of the internet model correlate to the layers of OSI model?

     Discuss in detail the various services provided by the layer.

                                Or

  (b) Determine the BCS for the following data and CRC generating polynomials and

     Explain the same data G(x) = xpow7+ xpow5+ xpow4+ xpow2+ xpow1+ xpow0 or

     10110111 CRC P(X) = xpow5+ xpow4+ xpow1+ xpow0 or 110011

12. (a) What is Ethernet? Describe the topologies and transmission formats used with

LANS

                                Or

  (b) Describe Wireless LAN and its applications.

13. (a) Explain in detail various duties of Network Layer.

Or

(b) What is meant by unicast &multicast routing? Explain routing protocols in detail.

14. (a) Discuss TCP congestion control and Avoidance Mechanisms.

Or

(b) What is the difference between TCP&UDP? Explain about them.

15. (a) What are the two categories of cryptography methods? Explain with examples.

Or

(b) Write short notes on

(i) Domain name service

(ii) SMTP

(iii) MIME