(Please Write Your Exam. Roll No.) *Exam. Roll No……..*

END TERM EXAMINATION

FOURTH SEMESTER [MCA], MAY-2011

Paper Code: MCA-208 *Subject: Computer Networks*

Paper Id: 44208

Time:3 Hours *Maximum Marks: 60*

Note: Q. 1 is compulsory. Attempt one question from each unit.

Q.1 Answer all the following questions in briefly. **(2X10)**

(a) Describe why an application developer may choose to run an application over UDP rather than TCP?

(b) A signal is sampled. Each sample represents one of four levels. How many bits are needed to represent each sample? If the sampling rate is 8000 samples per second, what is the bit rate?

(c) What is the function of a modulator? Compare the FM bandwidth with the Am bandwidth in terms of the modulating signal.

(d) What is inverse multiplexing? Discuss the duration of the data unit before and after the TDM process.

(e) Why Ethernet frame should have minimum data size? Compare the data rate for traditional Ethernet, fast Ethernet and gigabit Ethernet.

(f) What are the desirable properties of routing algorithms? Give an example of any one type of dynamic routing algorithms.

(g) What is difference between an interior routing protocol and exterior routing protocol? Name an example of each type.

(h) How DSL modem can support high speed digital communication over the existing telephone local loops?

(i) Describe Real Time Transport and Session Control protocols.

(j) Draw and explain the I (Information frame) in HDLC.

UNIT- I

Q. 2

(a) What are the essential elements or functions of network architecture to achieve good and reliable communication? How are these functions organized into a layered structure? **(4)**

(b) With the help of a block diagram and necessary expressions, explain the working of QPSK system. **(4)**

(c) Compare ASK and FSK system. **(2)**

Q. 3

(a) Discuss the modes for propagating light along optical channels with proper diagrams. **(3)**

(b) Compare TCP/IP with OSI reference model. State the similarities and differences between these two models. **(3)**

(c) With the help of block diagram, explain working of PCM system. **(4)**

UNIT – II

Q. 4

(a) Explain the following: **(4)**

(i) HDLC configuration and transfer modes.

(ii) HDLC frame format and control field formats.

(b) What does the number on an ACK frame mean for: **(6)**

(i) Stop-and-wait ARQ?

(ii) Go-back-n ARQ?

(iii) Selective-repeat ARQ?

Also describe these above techniques in brief.

Q.5

(a) What is piggybacking? Discuss the size of the Go-Back-N ARQ sliding window at both the sender site and the receiver site. **(4)**

(b) How is CRC superior to two-dimensional parity check? How does the checksum checker know that the received data unit is undamaged? **(2)**

(c) Discuss the following with reference to LANs:

(i) Exponential back off algorithm.

(ii) CSMA/CD vs. CSMA/CA. **(4)**

UNIT- III

Q. 6

(a) Explain the Leaky bucket algorithm to control congestion. Explain how the drawbacks of this are overcome in a token bucket algorithm? **(5)**

(b) Explain why each specific set of traffic description and QoS parameters were selected for each of ATM service categories? **(5)**

Q. 7

(a) What are the various functions and operations performed by a router? Explain. **(3)**

(b) Discuss the usefulness of extension headers in IPv6 with suitable figures. **(3)**

(c) Explain the difference between the leaky bucket traffic shaper and the token bucket traffic shaper. **(4)**

UNIT – IV

Q. 8

(a) Compare the TCP header and UDP header. List the fields in the TCP header that are missing from UDP headers. Give the reason for their absence. **(5)**

(b) What is the purpose of following fields in TCP segment header?

(i) Urgent pointer

(ii) Six 1- bit flags

(iii) Window size **(5)**

Q. 9

(a) Explain the following terms in the context of transport layer

(i) Forbidden region

(ii) Three- way handshake **(4)**

(b) What are the services provided by Transport layer? Explain with a neat diagram the TCP segment header. **(6)**