Roll No: .....

Total No. of Questions : 09]

[Total No. of Pages :03

Paper ID [A0460]

(Please fill this Paper ID in OMR Sheet)

B. Tech. (Sem. - 4th)

DATA COMMUNICATION (CS - 206)

Time : 03 Hours **Maximum Marks : 60**

Instruction to Candidates:

1) Section - A is **Compulsory**.
2) Attempt any **Four** questions from Section - B.
3) Attempt any **Two** questions from Section - C.

Section - A

Q1) *(10 × 2 = 20)*

a) LAN security is described in the following standard.

(A) 802.8 (B) 802.9

(C) 802.10 (D) 802.11

b) If you connect to the internet from your home computer, chances are that you are using

(A) PPP (B) NCP

(C) DAP (D) FTAM

c) The network topology which uses hierarchy of nodes is

(A) Ring (B) Tree

(C) Bus (D) Fully connected

d) The transmission media with maximum error rate is

(A) Coax cable (B) Infrared waves

(C) Satellite link (D) Optical fiber

e) ABM in HDLC stands for

(A) Asynchronous Balanced Mode

(B) Asynchronous Balanced Modem

(C) Asynchronous Bisync Mode

(D) Asynchronous Bus Modem

f) ATM uses the following multiplexing technique

(A) FDM (B) TDM

(C) WDM (D) Statistical Muxing

g) Gigabit Ethernet uses

(A) 8B 10B encoding (B) PCM encoding

(C) Huffman encoding (D) Shannon Fano encoding

h) The maximum number of unconfirmed frames that can be outstanding at any one time with SDLC is _____.

(A) 4 (B) 7

(C) 14 (D) 8

i) CLP field is used in ATM cell header to _____.

(A) Detect and correct single bit errors

(B) Indicate type of frame

(C) Provide flow control

(D) To discard cell when necessary

j) In which type of switching do all the datagrams of a message follow the same channels of a path?

(A) Circuit switching

(B) Data gram packet switching

(C) Virtual circuit packet switching

(D) Message switching

Section - B

(4 × 5 = 20)

Q2) Explain the difference between connectionless unacknowledged service and connectionless acknowledged service. How do the protocols that provide these services differ?

Q3) A channel has a bit rate of 20 Kbps. The stop and wait protocol with a frame size of 4500 bits is used. The delay for error detection and sending ack by the receiver is 0.25 seconds-because of a fault. Find the maximum efficiency of the channel if the destination is 30000 kms away and the speed of the propagation of the signal is 2.8×10^8 m/s. Find the decrease in efficiency due to the fault.

Q4) Explain the various layers of TCP/IP Model mentioning the protocols used in each layer.

Q5) What is congestion? Explain the leaky bucket algorithm to control congestion. Explain how the drawbacks of this are overcome in a token bucket algorithm.

Q6) With reference to X.25, explain
(a) Switched virtual circuit.
(b) Permanent virtual circuit.
(c) Protocols used at the link level.
(d) State diagram to explain call setup and call clearing.

Section - C

(2 × 10 = 20)

Q7) (a) What are the advantages and limitations of using frame relay over X.25 for communication? What are the various steps in congestion control handling in frame relay networks?
(b) Explain the structure of a switch. How is it different from a Hub?

Q8) (a) A slotted ALOHA channel has an average 10% of the slots idle. What is the offered traffic G? Calculate the throughput and determine whether the channel is overloaded or under loaded?
(b) Describe in detail the principle of CSMA/CD and Token ring protocol.

Q9) (a) Explain where the following fit in the OSI reference model.
(i) A 4 kHz analog connection across the telephone network.
(ii) A 33.6 kbps modem connection across the telephone network.
(iii) A 64 kbps digital connection across the telephone network.
(b) Explain briefly any two application layer protocols.