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Total No. of Questions : 09]

[Total No. of Pages :03

## Paper ID [A0460]

(Please fill this Paper ID in OMR Sheet)

**B. Tech. (Sem. - 4<sup>th</sup>)**

**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  $2.8 \times 10^8$  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.

