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Your Roll No.

B

B.Sc. (Hons.) COMPUTER SCIENCE / V Semester

Paper CS-502 : COMPUTER NETWORKS

(Admissions of 2001 and onwards)

Time : 3 hours

Maximum Marks : 75

*(Write your Roll No. on the top immediately
on receipt of this question paper.)*

*All questions are compulsory. Parts
of the question should be answered together.*

1. (a) Which of the OSI Layer(s) handles each of the following :-

(i) Flow Control

(ii) Synchronization

(iii) Routing decision (3)

(b) State whether a Connection-Oriented or Connectionless service is required for the following :-

(i) ATM

(ii) DNS Query

(iii) X.25

(iv) Real time traffic (4)

P.T.O.

- (c) What do you understand by modulation? Define various types of modulation schemes used in analog communication. Draw the constellation diagram for 16 QAM using 3 amplitude and 3 phases per quadrant. (1+2+2)
- (d) Explain backward learning in Transparent Bridges. (3)
2. (a) What signal-to-noise ratio is needed to put a T1 carrier on a 50-kHz line? (3)
- (b) What will be the transmitted frame when original frame is 10100001101 and generator polynomial is 11001, using cyclic redundancy check? (4)
- (c) What is the difference between In-band signaling and Out-band signaling? Which scheme does ISDN use? (2+1)
- (d) What is a URL? List and explain its different components. (1+1+1)
- (e) How is BOOTP different from DHCP? (2)
3. (a) What are two types of switches? Distinguish between them. (1+2)
- (b) Diagrammatically explain IP-header and discuss the various fields including option field of header. (6)

- (c) What do you understand by subnetting? Extract the subnet address from the IP address 125.134.112.66 with subnet mask 255.255.244.0. (1+2)
- (d) Discuss count to infinity problem in Distance Vector Routing. (3)
4. (a) What is the size of ATM cell? Why is it small and of fixed-length? (1+2)
- (b) A signal has a bandwidth of 20 Hz. The highest frequency is 60 Hz. What is the lowest frequency? Draw the spectrum if signal contains all integral frequencies of the same amplitude. (1+2)
- (c) Explain the use of piggybacking? Discuss the working of sliding window protocol. (1+3)
- (d) A cable TV system has 150 commercial channels, all of them alternating programs with advertising. Is this more like TDM or like FDM? (2)
- (e) Describe three-way handshake connection establishment scheme in TCP? (3)
5. (a) Explain the algorithm by which the collisions can be reduced in Ethernet. (4)

(b) Draw the waveform of the bit stream 101100111001 using the following encoding schemes :

(i) Manchester encoding

(ii) NRZ - I encoding

(iii) Differential Manchester encoding

(iv) RZ encoding (1+1+1+1)

(c) Discuss the technique that allows programmers to call procedures located on remote hosts along with its disadvantages. (4)

(d) What do you mean by well-known ports? Name ports used by HTTP and SMTP. (1+2)