

*This question paper contains 4 printed pages.]*

**1799**

*Your Roll No. ....*

**B.Sc. (Hons.) COMPUTER SC. / V Sem. A**  
**Paper 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.)*

*Note : All questions are compulsory.*

*Parts of the question should be answered together.*

1. (a) Which of the OSI layers handles each of the following ?
- (i) Determine which route through the subnet to use.
  - (ii) Provides services to the user.
  - (iii) Divide the transmitted bit stream into frames.
- (b) What is the role of Virtual Circuit, Virtual Path and transmission path in ATM architecture ?

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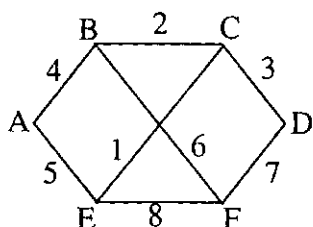
4

[P.T.O.]

2. (a) What signal-to-noise ratio is needed to put a TI carrier on a 50-kHz line ? 3
- (b) What is the role of station keeping in Geostationary Satellites ? 2
- (c) Can baud rate be greater than bit rate ? Justify. 3
3. (a) The following character encoding is used in a data link protocol :  
 A : 01000111; B: 11100011; flag:01111110, ESC:11100000  
 Show the bit sequence transmitted for the four-character frame : A B ESC flag when each of the following framing methods are used :
- (i) Starting and ending flag bytes with bit stuffing.
- (ii) Starting and ending flag bytes with byte stuffing. 4
- (b) What will be the transmitted frame when original frame is 10100001 and generator polynomial is 1001, using cyclic redundancy check. 4
4. (a) Explain backward learning in Bridges. 3
- (b) Why do we need minimum frame length in CSMA/CD ? 3
- (c) With the help of diagram explain the functions of Hub. 2

(d) Explain the algorithm by which the degree of collision can be reduced in Ethernet. 4

5. (a) Distance vector routing algorithm is used in the following subnet. Vectors that have just come in to router C are : from B: (5, 0, 8, 12, 6, 2); from D: (16, 12, 6, 0, 9, 10); and from E : (7, 6, 3, 9, 0, 4). C's vector is (1, 2, 0, 2, 1, 3). The measured delays to B, D, and E, are 6, 3 and 5 respectively. What is C's new routing table ? Give both the outgoing line to use and the expected delay. 5



- (b) What are the disadvantages of RARP protocol ? Name the protocols that can be used to rectify these problems. 4
- (c) A network on the internet has a subnet mask of 255.255.240.0. What is the maximum number of hosts it can handle ? 2
6. (a) Write the steps required to establish and releasing TCP connection between a client and the server. 4
- (b) What do you mean by well known ports ? Give example. 2

- (c) What are the problems in Remote Procedure Call ?  
4
7. (a) Does DNS use TCP or UDP ? Why ? 2
- (b) How plug-in and helper application helps browser to display page to viewer ?  
4
- (c) Give name of the protocols used for following services :
- (i) remote logging
- (ii) e-mail  
2
8. (a) What is the difference between in-band signaling and out-of-band signaling ?  
2
- (b) Draw the waveform of the following coding schemes for the bit pattern : 10011110
- (i) HDB3 encoding
- (ii) NRZ-L encoding
- (iii) Manchester encoding 6
- (c) 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.  
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