



Examination : First Sessional Seat No. : \_\_\_\_\_  
Date : 06/08/2012 Day : Monday  
Time : 11 to 12:15 Max. Marks : 36

---

**INSTRUCTIONS:**

1. Figures to the right indicate maximum marks for that question.
  2. The symbols used carry their usual meanings.
  3. Assume suitable data, if required & mention them clearly.
  4. Draw neat sketches wherever necessary.
- 

**Q. Do as directed.**

**1 [12]**

**(a Fill In The Blanks:**

**[2]**

- (I) 100Base-T means \_\_\_\_\_
- (II) In ATM reference model the physical layer is divided into two sub layers \_\_\_\_\_ and \_\_\_\_\_.
- (III) The frame status (FS) byte is set by the \_\_\_\_\_ and checked by the \_\_\_\_\_ station which removes its frame from the ring and generates another token.
- (IV) In \_\_\_\_\_ technique, each node gets a chance to access the medium by rotation.

- (b (I) Your company has a LAN in its downtown office and has now set up a LAN in the manufacturing plant in the suburbs. To enable everyone to share data and resources between the two LANs, what type of device(s) are needed to connect them? Choose the most correct answer.**
- a) Modem (b) Repeater (c) Hub (d) Bridge

**[2]**

- (II) The slowest transmission speeds are those of :**
- (a) twisted-pair wire (b) coaxial cable (c) fiber-optic cable (d) microwaves

- (c ) What are the two reasons for using layered protocols?**

**[2]**

- (d ) What is the advantage of token passing protocol over CSMA/CD protocol?**

**[2]**

- (e ) Why does ATM use the cell of small and fixed length?**

**[1]**

- (f ) Is there any drawback of using piggybacking?**

**[1]**

- (g ) What is the difference between network layer delivery and transport layer delivery?**

**[1]**

- (h ) Give two examples of a 'collision-free' protocol?**

**[1]**

Attempt **Any Two** from the following questions.

**[12]**  
**]**

- (a) **(I)** Consider a message D, presented by the following polynomial **[4]**  
 $x^{19} + x^{17} + x^{16} + x^{13} + x^{12} + x^{11} + x^9 + x^5 + x^2 + 1$   
 ) Calculate the CRC code R for that message using a "generator-polynomial"  
 $x^7 + x^5 + x^4 + x^3 + x^2 + 1$ .  
 Represent in binary code the message to be sent (D and R) **[2]**
- (II)** List the functions performed by the physical layer of 802.3 standards?
- (b) The following character encoding is used in a data link protocol: **[6]**  
 ) A:01000111; B:11100011; FLAG:01111110; ESC:11100000  
 Show the bit sequence transmitted (in binary) for the four character frame :A B ESC FLAG when each of the following methods are used:  
 (a) Character count.  
 (b) Flag bytes with byte stuffing.  
 (c) Starting and ending flag bytes, with bit stuffing.
- (c) **(I)** Explain IEEE 802.5 standard. **[4]**  
 ) **(II)** Draw Manchester and differential Manchester encoding for the **[2]**  
 following binary pattern  
 100011110111011

- Q. 3** (a) Test if these code words are correct, assuming they were created using an even parity Hamming **[6]**  
 ) Code. If one is incorrect, indicate what the correct code word should have been. Also, indicate what the original data was. Assume that not more than 1 bit is in error.  
**(I)** 010101100011 **(II)** 111110001100 **(III)** 000010001010
- (b) **(I)** Explain High level data link control protocol. **[4]**  
 ) **(II)** In Go-Back-N protocol, what will be the maximum sender's window **[2]**  
 size if four bit sequence field is used?

**OR**

- Q. 3** (a) **(I)** ACK 7 has been received by the sender in a go-back-N sliding **[6]**  
 ) window system. now frames 7,0,1,2& 3 are sent .For each of the following separate scenarios, discuss the significance of the receiving of  
 (a) An ACK 1  
 (b) An ACK 4  
 (c) An ACK 3  
**(II)** Repeat the above question using selective-repeat protocol for following separate scenarios, discuss the significance of the receiving of  
 (a) A NAK 1  
 (b) A NAK 3  
 (c) A NAK 7
- (b) **(I)** What is the principle difference between connectionless **[3]**  
 ) communication and connection-oriented communication?  
**(II)** Match the following **[3]**  
 (A) Stop & Wait (1) Receives out of order Frames  
 (B) Go-Back-N (2) Sends only one Frame at a time.  
 (C) Selective Repeat (3) Used in connectionless communication  
 (D) Pipelining (4) Used in connection oriented communication  
 (5) Receive only one packet at a time.  
 (6) Sends Frame & ACK together.