

**Code: DE21/DC11****Subject: DATA COMMUNICATION & NETWORKS****Time: 3 Hours****Max. Marks: 100****DECEMBER 2008****NOTE: There are 9 Questions in all.**

- Question 1 is compulsory and carries 20 marks. Answer to Q. 1. must be written in the space provided for it in the answer book supplied and nowhere else.
  - Out of the remaining EIGHT Questions answer any FIVE Questions. Each question carries 16 marks.
  - Any required data not explicitly given, may be suitably assumed and stated.
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**Q.1 Choose the correct or the best alternative in the following: (2x10)**

- a. Sending a file from your personal computer's primary memory or disk to another computer is called
- (A) uploading (B) downloading  
(C) logging on (D) hang on
- b. Which layer of OSI reference model is responsible for creating and recognizing frame boundaries?
- (A) Physical layer (B) Data link layer  
(C) Transport layer (D) Network layer
- c. The most flexibility in how devices are wired together is provided by
- (A) Bus networks (B) Ring networks  
(C) Star networks (D) T-switched networks
- d. All of the parts in a computer communicate with each other by sending
- (A) Digital signals (B) Analog signals  
(C) smoothly varying signal waves (D) both (B) and (C)
- e. The main difference between synchronous and asynchronous transmission is
- (A) The clocking is derived from the data in synchronous transmission.  
(B) The clocking is mixed with the data in asynchronous transmission.  
(C) The pulse height is different.  
(D) The bandwidth required is different.
- f. Which of the following is a voiceband channel?
- (A) Telephone line (B) Telegraph line  
(C) Coaxial cable (D) Microwave systems
- g. If communication software can be called the "traffic cop" of a microcommunication system, then what should the modem be called
- (A) Park (B) Bridge

**(C)** Interface**(D)** Link

- h. The shortest path in routing can refer to \_\_\_\_\_.
- (A)** The least expensive path  
**(B)** The least distant path  
**(C)** The path with the smallest number of hops  
**(D)** Any or a combination of the above
- i. A band is always equivalent to
- (A)** a byte **(B)** a bit  
**(C)** 100 bits **(D)** none of the above
- j. Which of the following data transmission media has the largest terrestrial range without the use of repeaters or other devices?
- (A)** Hardwiring **(B)** Microwave  
**(C)** Satellite **(D)** Laser

**Answer any FIVE Questions out of EIGHT Questions.**

**Each question carries 16 marks.**

- Q.2** a. With the help of neat block diagram, explain the basic architecture of data communication network. **(8)**
- b. List some of the advantages of multi-point connection over a point to point connection? **(4)**
- c. If you have to add new nodes to the network very often, which network would you suggest being the best? List other advantages possible with this type of network. **(4)**
- Q.3** a. Discuss the salient features of IPv4 addressing and compare it with IPv6. **(8)**
- b. Explain the relevance and importance and classification of Protocols? **(8)**
- Q.4** a. Compare the various switching methods employed in transmission of information. **(8)**
- b. Define Multiplexing and explain three major methods of multiplexing FDM, TDM and Statistical TDM in short. **(8)**
- Q.5** a. Explain the role of CSMA/CD in LAN. **(8)**
- b. Data is to be transmitted from City A to City B. The data was CRC coded at City A using the divisor 10101. The data 1100100101011 was received at City B. How would you find whether the received data is the exact one sent from City

A? (8)

- Q.6** a. Explain the term ISDN. Discuss the concepts of BRI and PRI and their data rates. (8)
- b. For a satellite link if propagation delay is 520ms, channel capacity is 50kbps and frame size is 500 bits. Find the optimum window size. (8)
- Q.7** a. Distinguish ATM from frame relay. Also explain the two methods used in transmission of ATM cells. (8)
- b. Consider a 10 Mbps single segment Ethernet LAN having a cable length of 500 meters and a mean frame length of 500 bytes. Assuming the speed of signal propagation to be  $2.0 \times 10^5$  km/sec and an average of  $e \approx 2.72$  contention slots per contention interval. Determine the channel efficiency? (8)
- Q.8** a. Draw the frame format of IEEE 802.3 and explain each field of this. (8)
- b. Discuss the unique features of X.25 standard to be used for communication. (8)
- Q.9** a. Explain the following: (8)
- (i) MIME
  - (ii) HTTP
  - (iii) SNMP
  - (iv) FTAM
- b. Discuss salient features of Transmission Control protocol and Internet protocol. (8)