

**DECEMBER 2006****Code: D-21 / DC-11****Subject: DATA COMMUNICATION & NETWORKS****Time: 3 Hours****Max. Marks: 100****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.**

**Q.1 Choose the correct or best alternative in the following: (2x10)**

a. A common standard for serial communication is

- (A) ASCII. (B) EBCDIC.  
(C) RS-232. (D) Centronics.

b. The main purpose of computer network is

- (A) Resource sharing. (B) Computation speed up.  
(C) Reliability. (D) Communication.

c. In the \_\_\_\_\_ layer, the data unit is called a packet.

- (A) Physical layer. (B) Data link layer.  
(C) Transport layer. (D) Network layer.

d. In HDLC, ABM means

- (A) Automatic Balanced Mode. (B) Asynchronous Balanced Mode.  
(C) Assymetrical Balanced Mode. (D) Automatic Back-up Mode.

e. For stop and wait ARQ protocol, the maximum utilisation of the link is given by \_\_\_\_\_ where parameters given have usual significance

- (A)  $U = \frac{1}{1 + \frac{2Rd}{VL}}$  (B)  $U = 1 + \frac{2Rd}{VL}$   
(C)  $U = \frac{1}{1 + \frac{Rd}{VL}}$  (D)  $U = 1 + \frac{Rd}{VL}$

- f. The \_\_\_\_\_ houses the switches in Token Ring.
- (A) NIC (B) MAU  
(C) nine-pin connector (D) Transceiver
- g. BISDN is an acronym for
- (A) Broadband Information Services for Digital Networks  
(B) Broadband Internetwork System for Data Networks  
(C) Broadband Integrated Services Digital Network  
(D) Broadband Integrated Digital Network
- h. Which of the following operates in all seven layers of the OSI model
- (A) Bridge (B) Gateway  
(C) Routers (D) All of the above
- i. The data unit in the TCP layer is called a \_\_\_\_\_
- (A) Message (B) Segment  
(C) Datagram (D) Frame
- j. The X.25 protocol operates in the \_\_\_\_\_ of the OSI model
- (A) Physical layer (B) Data link layer  
(C) Network layer (D) Transport Layer

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**Answer any FIVE Questions out of EIGHT Questions.  
Each question carries 16 marks.**

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- Q.2** a. Discuss the principles used in defining the OSI layers. (8)
- b. What is flow control in computer networks? Explain. (8)
- Q.3** a. A telephone line normally has a bandwidth of range 300 Hz to 3300 Hz. The signal to noise ratio is usually 3162 (35 dB). For this channel, calculate the capacity in kbps.  
(6)
- b. Explain the importance of DCE, DTE as applied to data communication. (5)
- c. Assume that you are to design a TDM carrier, say DS-489, to support 30 voice channels using 6 bit samples and a structure similar to DS-1. Determine the required bit rate.  
(5)

- Q.4** a. How network access layer is involved in TCP/IP layers. (6)
- b. Explain the key services provided by the transport layer in detail. (10)
- Q.5** a. How do the layer of the TCP/IP protocol suite correlate to the layers of the OSI model? (10)
- b. Discuss the ARQ protocols you have studied and compare them. (6)
- Q.6** a. Explain the elements required for packet switching networks. (8)
- b. List at least five different strategies for controlling congestion. (8)
- Q.7** a. Can bridging be used along with routers? Explain. (8)
- b. Differentiate between
- (i) Twisted Pair and Co-axial cable.
  - (ii) Network layer and Data Link Layer. (4 × 2)
- Q.8** Write short notes on the following:
- (i) HDLC (ii) Wireless networks (iii) IPv6 (iii) ATM cells (4 × 4)
- Q.9** a. Explain the specifications in detail, for the following protocols. (6)
- (i) FTAM (ii) HTTP (III) SNMP
- b. Give the concept of electronic mail operation. (4)
- c. Discuss frame relay congestion control techniques. (6)