Code: DE21 / DC11 **Subject: DATA COMMUNICATION & NETWORKS**
Time: 3 Hours **Max. Marks: 100**

JUNE 2011

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.**
- **The answer sheet for the Q.1 will be collected by the invigilator after 45 Minutes of the commencement of the examination.**
- **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 the best alternative in the following: **(2×10)**

a. Where are routers defined in the OSI model?

(A) Physical layer **(B)** Transport layer
(C) Data Link layer **(D)** Network layer

b. Which protocol working at the transport layer provides a connectionless service between hosts?

(A) UDP **(B)** ARP
(C) TCP **(D)** IP

c. Segmentation of a data stream happens at which layer of the OSI model?

(A) Physical layer **(B)** Transport layer
(C) Data Link layer **(D)** Network layer

d. TCP/IP model has _____ layers.

(A) 7 **(B)** 5
(C) 3 **(D)** 4

e. 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

f. Which of the following performs modulation and demodulation?

(A) fibre optic **(B)** satellite
(C) coaxial cable **(D)** modem

g. A required characteristics of an on-line real-time system is:

(A) more than one CPU **(B)** off-line batch processing
(C) no delay in processing **(D)** all of the above

h. Communication circuits that transmit data in both directions but not at the same time are operating in:

(A) Simplex mode **(B)** Half duplex
(C) Full duplex **(D)** Asynchronous model

i. A communication device that combines transmission from several I/O devices into one line is a:

(A) Concentrator **(B)** Modifier
(C) Multiplexer **(D)** Full duplex line

j. ITU-T's X.200 standard describes:

(A) TCP/IP model **(B)** ATM networks
(C) OSI model **(D)** ISDN networks

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

Q. 2 a. What is the channel capacity for a voice channel with a 3100 Hz bandwidth and a signal to noise ratio of 30 dB? **(4)**

b. List the Transmission media used in computer communication. Compare multi-point communication over point to point communication. **(6)**

c. Briefly explain the various modulation techniques used in computer communication. **(6)**

Q. 3 a. Briefly explain Half Duplex and Full Duplex transmission. **(4)**

b. What is error detection? Briefly explain the CRC method of Error detection. **(6)**

c. Write short note on OSI model and TCP/IP model. **(6)**

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Q.4 a. What is circuit switching? Briefly explain the various phases involved in communication via circuit switching. Compare it with packet switching. **(8)**

b. What is multiplexing? Briefly explain FDM and TDM Multiplexing along with their advantages and disadvantages. **(8)**

Q.5 a. What is a bridge? What are the reasons of using multiple LANs connected by bridges instead of using one large LAN? **(8)**

b. Write short notes on the following:-
(i) IPv6
(ii) IP multicasting **(8)**

Q. 6 a. Briefly explain fixed, flooding, random and adaptive routing strategies. **(8)**

b. What are the key differences between frame relaying and conventional X.25 packet switching service. **(4)**

c. Briefly explain UDP. **(4)**

Q. 7 a. Briefly explain the principles used in defining the seven layers of OSI reference model **(8)**

b. What are different classes of IP addresses? **(4)**

c. Briefly explain Bus topology. Also state the problems that are encountered in this topology. **(4)**

Q. 8 a. Congestion control schemes available in packet switched and frame relay networks are inadequate for ATM networks. Briefly explain. **(8)**

b. Define ISDN. Briefly explain the various principles of ISDN. **(8)**

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Q. 9 a. Explain the following in detail:-
(i) SMTP
(ii) MIME **(8)**

b. Write short notes on the following:-
(i) URL
(ii) HTTP **(4)**

c. Differentiate between the following:-
(i) Client and Server
(ii) Gateway and Proxy **(4)**