ENGINEERING & MANAGEMENT EXAMINATIONS, DECEMBER – 2006

DATA COMMUNICATION & COMPUTER NETWORKS

SEMESTER – 5

Time : 3 Hours] [Full Marks : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Answer Question No. 1 and any 4 questions from the rest.

1. Choose and write the correct answer to each of the following questions : $10 \times 1 = 10$

i) Go Back-N ARQ & Stop & Wait ARQ are the techniques of

a) flow & error control

b) noise control

c) congestion control

d) none of these.

ii) Baud rate of the signal if the bit rate is 4000 bits per second & 4 bits per signal is

a) 4000

b) 16000

c) 1000

d) none of these.

iii) Number of layers in TCP/IP Model is

a) 5

b) 7

c) 4

d) none of these.

iv) How many characters per second (7 bits + 1 parity) can be transmitted over a 2400 bps line, if the transfer is synchronous (1 start and 1 stop bit) ?

a) 300

b) 240

c) 250

d) 275.

v) The topology with highest reliability is

a) bus topology

b) star topology

c) ring topology

d) mesh topology.

vi) Which layer handles encryption in ISO/OSI model ?

a) Physical

b) Presentation

c) Session

d) Application.

vii) A high speed communication equipment typically would not be needed for

a) *e*-mail

b) transferring large volume of data

c) supporting communication between nodes in a LAN

d) all of these.

viii) UDP belongs to

a) Network layer

b) Transport layer

c) Mac layer

d) Data link layer.

ix) A modem constellation diagram has data points at (0, 1) and (0, 2). What type of modulation does the modem use ?

a) Phase modulation

b) Amplitude modulation

c) Both (a) and (b)

d) none of these.

x) Start and stop bits are used in serial communication for

a) error detection

b) error correction

c) synchronisation

d) slowing down the communication.

a) What is Switching ? Explain the three Switching techniques with diagrams. 5

b) Explain the Token ring network (IEEE 802·5) & FDDI. 5

c) What are the differences between unicast, multicast and broadcast addresses ? 5

3. a) According to Nyquist, what frequency is necessary to support a bit rate of 3 kbps using (i) one bit per signal component (ii) three bits per signal component ? 5

b) Given the following information, find the maximum bandwidth for each signal source :

i) FDM multiplexing

ii) Total available bandwidth - 7900 Hz

iii) Three signal sources

iv) A 200-Hz guard band between each signal source. 10

3 × 5

4. Explain the following terms with examples :

a) FSK

b) AM

c) PSK. 9

5. a) Explain with a suitable diagram, the working of OSI reference model.

b) What do you understand by the terms —

i) LAN

ii) MAN

iii) WAN ?

Give examples for each. 3 × 2

3 × 5 = 15

6. Describe the features of the following devices :

a) Switch

b) Gateway

c) Repeater. 3 × 5 = 15

7. Write short notes on the following :

a) X.25 protocol

b) CSMA - CD

c) Circuit switched and packet switched networks.

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