2018

MCA 4th Semester Examination

COMPUTER NETWORKS

PAPER—MCA-404

Subject Code—32

Full Marks : 100

Time : 3 Hours

The figures in the margin indicate full marks.

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

Illustrate the answers wherever necessary.

Answer Q. No. *1* and any *four* from the rest.

1. Answer any *five* questions : 5×2

(a) Determine the bandwidth requirement through a band limited medium to achieve a bit rate of 10 kbps using the first three harmonics.

(b) What is the difference between a low pass and band pass channel ?

(c) Find the capacity of a channel, the value of signal-to-noise-ratio of which is zero.

(d) A signal travels through an amplifier and it's power is increased 10 times. Calculate the amplification in dB.

(e) Define signal level and data level of a digital signal.

(f) Why port address is used ?

(g) Give some examples of connection oriented and connection less services.

2. (a) Consider the following data : 01011010. Encode this data using differential Manchester encoding scheme to construct the corresponding signal form.

(b) What is the advantage of using Manchester encoding technique over RZ encoding technique ?

(c) Given a bandwidth of 3000 Hz for an ASK signal, what are the band rate and bit rate ? Assume that, 2 bits are represented by each signal unit.

(d) What do you mean by quadrature amplitude modulation (QAM) ? Compute the bit rate of a 2000 band 16 QAM signal. 4+2+4+(2+3)

3. (a) What is frequency modulation ? What are the advantages of using frequency modulation over amplitude modulation.

(b) We have an audio signal with a bandwidth of 5 Hz. What is the bandwidth needed it we modulate the signal using frequency modulation ?

(c) With the help of a diagram, briefly describe the working principle of time division multiplexing.

(d) How light signal passes through fibre optic cable ?

(3+2)+2+5+3

4. (a) Briefly describe the responsibilities of presentation and session layers in ISO/OSI reference model.

(b) Differentiate between circuit switching & packet switching.

(c) Construct Hamming code for the data :

10010011 (3+3)+3+6

5. (a) Describe the significance of the sliding windows at sender and receiver sides in selective repeat APQ technique with the help of a diagram.

(b) Briefly describe the persistant strategy in CSMA.

(c) How CSMA/CD differs with CSMA/CA ?

(d) In the context of multiple access, what do you mean by channelization ? Give example. 6+3+3+(2+1)

6. (a) How dynamic mapping is done by ARP ? Briefly describe with an example.

(b) What is the difference between adaptive and non-adaptive routing protocols ? Describe any one adaptive routing algorithm. 6+(2+7)

7. Write short notes (any *three*) : 3×5

(a) HDLC ;

(b) Subnetting ;

(c) UDP ;

(d) Default Mask ;

(e) Congestion control in a subnet.

[Internal Assessment : 30]

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