2019

MCA

4th Semester Examination

COMPUTER NETWORK

PAPER – MCA-404

Full Marks : 100

Time : 3 Hours

The figures in the right-hand 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 Question no 1 and any **FOUR** from the rest .

1. Answer any **FIVE** questions :　　　　　　　　　　　　　　　　5x2=10

a) A noiseless channel has a band width of 3000 Hz. It can transmit a signal with eight signal levels . Find the maximum bit rate .

b) What do you mean by distortion ? Give example .

c) Differentiate between synchronous and asynchronous transmission .

d) Compute the bit rate of a 2000 – baud 16-QAM signal

e) What is the basic function of a modem ?

f) Suppose the following block of 16 bits is to be transmitted using a check sum of 8 – bits :

　　10101011　10010011

Find the pattern to be sent .

g) What do you mean by polling ?

2. a) Briefly describe the layered architecture of ISO / OSI reference model .　　　10

　b) How TCP/IP reference model differs with the ISO/OSI model ?　　　　　　5

3. a) In a digital transmission, the sender clock is 0.4 percent faster than the receiver clock . 4

　　How many extra bits per second does the sender send if the data rate is 1 Mbps ?

b) Consider a low pass signal with a bandwidth of 300 KHz using 1024 levels of quantization. 6

　i) Calculate bit rate of digitized signal .

　ii) Calculate SNR_{dB} for the signal.

　iii) Calculate PCM bandwidth for the signal

c) What is constellation diagram ? Show constellation diagram for BPSK and QPSK signals .

　　　　　　　　　　　　　　　　　　　　　　　　　　　　　(2+3)

4. a) What is amplitude modulation ? What is the drawback of using amplitude

   modulation? (4+5+6)

   b) Describe any one analog multiplexing technique .

   c) Construct the CRC for the following data :

   100100 , considering the divisor as x^3+x^2+1 .

5. a) What is Piggybacking ? Compare and contrast between byte oriented and 2+3

   bit oriented protocols .

   b) Discuss the Carrier Sense Multiple Access with Collision Detection (CSMA / CP) 3+3

   with flow diagram.

   Why do we need acknowledgement mechanism in CSMA / CA though we don't

   need it in CSMA / CD ?

   c) Discuss minimum Hamming Distance for Error detection . 2.5

   d) Explain checksum . 1.5

6. a) Given the IP address 18.250 . 31.14 and the subnet mask 255.240.0.0, (3+3+6+3)

   What is the subnet address ?

   b) What do you mean by super netting ?

   c) With a suitable example describe any one adaptive routing algorithm .

   d) What is ICMP ?

7. Write short notes :   (any three)   3x5=15

   a) CSMA

   b) QAM

   c) UDP

   d) SMTP

   e) Manchester Encoding Technique .

[Internal Assessment : 30]