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## Fourth Semester B.E. Degree Examination, June/July 2017

### Data Communication

Time: 3 hrs.

Max. Marks: 80

**Note: Answer FIVE full questions, choosing one full question from each module.**

#### Module-1

- 1 a. What is data communication? With a neat diagram, explain the four basic topologies. (05 Marks)
- b. Explain TCP/IP protocol suite with Encapsulation and decapsulation concepts. (08 Marks)
- c. Explain different characteristics of periodic analog signal. Find the phase in degree and radian of a sine wave with offset  $\frac{1}{4}$  cycle with respect to time '0' (zero). (03 Marks)

**OR**

- 2 a. Draw line code of the sequence 010011 using NRZ, NRZ-L, NRZ-I, Manchester, RZ and differential Manchester schemes. (06 Marks)
- b. Explain digital signal transmissions methods. (06 Marks)
- c. What is noiseless channel? Find out maximum bit rate in noiseless channel with bandwidth of 3000 Hz transmitting a signal with two signal level. (04 Marks)

#### Module-2

- 3 a. Explain PCM and quantization process with steps and example. (08 Marks)
- b. Explain amplitude shift keying modulation process. (04 Marks)
- c. Find out bit rate if available bandwidth is 100 kHz which spans from 200 to 300 kHz. Consider ASK with  $d = 1$ ,  $r = 1$ . (04 Marks)

**OR**

- 4 a. What is multiplexing? define synchronous TDM with data rate management strategies. (08 Marks)
- b. What is spread spectrum? Explain FHSS and bandwidth sharing. (08 Marks)

#### Module-3

- 5 a. How does datawords and codewords is represented in block coding and also explain how can errors be selected and corrected by using block coding. (10 Marks)
- b. Find the code word using CRC given data is 1101 and generator is 1100. (06 Marks)

**OR**

- 6 a. With a neat diagram, explain any two protocols of noisy channel. (12 Marks)
- b. Explain the frame format of HDLC protocol. (04 Marks)

#### Module-4

- 7 a. What is channelization? List and explain the channelization protocols. (12 Marks)
- b. Describe Gigabit Ethernet. (04 Marks)

**OR**

- 8 a. Describe pure ALOHA and slotted ALOHA. (06 Marks)
- b. Explain Carrier Sense Multiple Access with Collision Detection (CSMA/CD) (06 Marks)
- c. Define Bluetooth and its architecture. (04 Marks)

#### Module-5

- 9 a. Explain satellite networks and its categories. (12 Marks)
- b. Write a short note on Fixed WiMAX. (04 Marks)

**OR**

- 10 a. Explain mobile IP with phases. (12 Marks)
- b. Write a short note on IPV6 addressing. (04 Marks)