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15CS46

Fourth Semester B.E. Degree Examination, June/July 2018
Data Communication

Time: 3 hrs.

Max. Marks: 80

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

Module-1

1 a. Define Data Communication. Explain any two fundamental characteristics of Data communication and basic network topology. **(08 Marks)**
   b. List out the causes of transmission impairment. Explain the characteristics of analog and digital signals. **(08 Marks)**

OR

2 a. List out the network criteria. Explain TCP/IP protocol suite with neat diagram. **(08 Marks)**
   b. Define Line coding and list out its characteristics. Represent the following sequence 101100101 using polar and bipolar scheme. **(08 Marks)**

Module-2

3 a. List out the types of transmission modes. Explain the steps of pulse code modulation process, with an example. **(08 Marks)**
   b. Explain FSK and QAM modulation process, with suitable example. **(08 Marks)**

OR

4 a. Define Multiplexing. Explain synchronous TDM with data rate management and its limitations. **(10 Marks)**
   b. List out three phases of circuit – switched network. Explain Data gram – switched network. **(06 Marks)**

Module-3

5 a. Define Cyclic code. Find the codeword using CRC for given data word 1001 and divisor 1011. **(08 Marks)**
   b. Define Frames. Explain the steps of flow control at data link layer with diagram. **(08 Marks)**

OR

6 a. Explain Stop – and – Wait protocol with neat diagram. **(08 Marks)**
   b. Explain the frame structure of PPP protocol, with neat diagram. **(08 Marks)**

Module-4

7 a. List out the Random Access Protocols and explain CSMA/CA. **(10 Marks)**
   b. List out channelization protocols. Explain CDMA. **(06 Marks)**

OR

8 a. Explain Wireless – LAN, with neat architecture and list out its characteristics. **(08 Marks)**
   b. Explain the layers of Bluetooth, with neat diagram. **(08 Marks)**

Module-5

9 a. List the difference between IPV_4 and IPV_6. Explain any two methods of converting from IPV_4 to IPV_6. **(08 Marks)**
   b. Explain the IP Datagram, Header format, with neat diagram. **(08 Marks)**

OR

10 a. Define Home address in mobile IP. Explain three phases for communication in mobile IP. **(08 Marks)**
   b. Define WiMax. Explain fourth generation (4G) of cellular telephone. **(08 Marks)**

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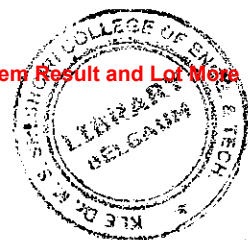
CBCS Scheme

USN ☐☐☐☐☐☐☐☐☐☐   15CS46

Fourth Semester B.E. Degree Examination, Dec.2017/Jan.2018
Data Communication and Networking

Time: 3 hrs.   Max. Marks: 80

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

Module-1

1. a. Define data communication. Explain the fundamental characteristics of a data communication system. With a neat diagram, explain the components of data communication. **(06 Marks)**
   b. Explain TCP/IP protocol suite of computer networks with a neat diagram. **(08 Marks)**
   c. Assume that five devices are connected in a mesh topology. How many duplex links are needed? How many ports are needed for each? **(02 Marks)**

OR

2. a. Explain different causes for transmission impairments during signal transmission through media. **(06 Marks)**
   b. Define line coding. List out its characteristics. Represent the sequence 10100110 using polar and biphase schemes. **(08 Marks)**
   c. A network with a bandwidth of 10 Mbps can pass only an average of 18000 frames per minute with each frame carrying an average of 10000 bits. What is the throughput of this network? **(02 Marks)**

Module-2

3. a. Explain with suitable diagram PCM encoder used for analog to digital conversion with example. **(08 Marks)**
   b. Define multiplexing. State and explain the data rate management to handle disparity in input data rates in TDM. **(05 Marks)**
   c. Four 1 Kbps connections are multiplexed together. A unit is 1 bit. Find:
   i) Duration of 1 bit before multiplexing.
   ii) Transmission rate of link.
   iii) Duration of each time slot. **(03 Marks)**

OR

4. a. Briefly explain with neat diagrams, ASK and FSK modulation techniques and specify the bandwidth requirement. **(06 Marks)**
   b. We need to send data 3 bits at a time at a bit rate of 3 Mbps. The carrier frequency is 10 MHz. Calculate the number of levels (different frequencies, band rate and band width). **(04 Marks)**
   c. Explain how message can be sent from one system to another using datagram approach and calculate the total delay with appropriate diagrams. **(06 Marks)**

Module-3

5. a. Find the code word at sender site using CRC given dataword 101001111 and generator 10111. **(05 Marks)**
   b. Explain different frame types in HDLC. **(06 Marks)**
   c. Explain transition phases of PPP protocol. **(05 Marks)**

OR

6 a. Explain with neat diagram, simple parity check code. (06 Marks)
   b. Explain with examples, computation of internet checksum. List the steps undertaken by sender and receiver for error detection. (05 Marks)
   c. Explain stop-and-wait protocol with appropriate diagrams. (05 Marks)

Module-4

7 a. Explain working of CSMA/CD with suitable flow diagram. (07 Marks)
   b. A network using CSMA/CD has a bandwidth of 10 Mbps. If the propagation time is 25.6 μs, what is the minimum size of the frame? (03 Marks)
   c. Define Bluetooth and explain the architecture of the same. (06 Marks)

OR

8 a. Define is channelization. Explain CDMA with an example. (06 Marks)
   b. A pure ALOHA network transmits 200 bits frames on a shared channel of 200 kbps. What is the throughput if the system produces 1000 frames per second. (04 Marks)
   c. Discuss 802.3 MAC frame format. (06 Marks)

Module-5

9 a. Explain the operation of cellular telephony. (06 Marks)
   b. Explain transition from IPV4 to IPV6. (06 Marks)
   c. Discuss special addresses supported by IPV6. (04 Marks)

OR

10 a. Explain IP datagram header format with neat diagram and give the description of each field. (08 Marks)
    b. Explain the working of mobile IP with diagram. (08 Marks)

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2 of 2

CBCS Scheme

USN | 2 | K | L | 1 | 5 | L | 5 | 0 | 6 | 2

15CS46

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)**

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