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By K B Hemanth Raj

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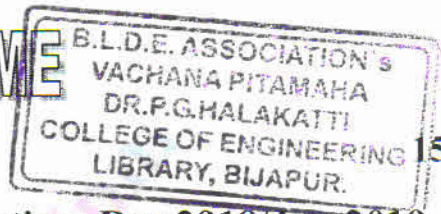ECE - Electronics and Communication Engineering
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15CS46

Fourth Semester B.E. Degree Examination, Dec.2018/Jan.2019
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 the Fundamental components of a data communication system. With the neat diagram, explain components of data communication.   **(06 Marks)**
    b.   List out the functionalities of physical layer, data link layer, network layer , explain in brief.   **(04 Marks)**
    c.   Define Transmission impairment. Explain different causes of transmission impairment during signal transmission.   **(06 Marks)**

OR

2   a.   Explain digital signal transmission methods. Explain line coding.   **(06 Marks)**
    b.   Draw the line code for the sequence 01001110 using NRZ , NRZ – L , NRZ – I , RZ , AMI.   **(07 Marks)**
    c.   Define Through put. A network with a bandwidth of 10mbps can pass only an average of 12,000 frames per minute. With each frame carrying an average of 10,000 bits. What is the throughput of this network?   **(03 Marks)**

Module-2

3   a.   Explain PCM and quantization process with steps.   **(08 Marks)**
    b.   What is Spread Spectrum? Explain FHSS with suitable diagram.   **(08 Marks)**

OR

4   a.   What is Multiplexing? Define Synchronous TDM, with data rate management – strategies.   **(07 Marks)**
    b.   Compute the following, if the data rate for each input connection is 1Kbps. If 1 bit at a time is multiplexed , what is the duration of i) Each input slot   ii) Each output slot iii) Each frame.   **(03 Marks)**
    c.   Explain how message can be sent from one system to another using datagram approach and calculate the total delay with appropriate diagram.   **(06 Marks)**
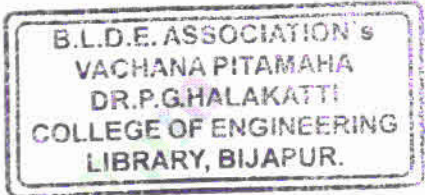
Module-3

5   a.   Explain Error detection using block coding.   **(06 Marks)**
    b.   Identify the code word using CRC given data word 1001 and generator is 1011.   **(04 Marks)**
    c.   Explain different frame types in HDLC.   **(06 Marks)**

OR

6   a.   What is Internet checksum? If a sender needs to send four data items 7, 11, 12, 0, 6 answer the following :   **(06 Marks)**
        i)   Find the checksum at the sender site.
        ii) Find the checksum at the receiver site if there is no error.
    b.   Explain stop and wait protocol with appropriate diagram.   **(04 Marks)**
    c.   Explain the frame format and transition phases of point to point protocol.   **(06 Marks)**

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Module-4

7 a. What is Channelization? List and explain the channelization protocols. **(06 Marks)**

   b. A slotted ALOHA network transmit 200 bit frames using a shared channel with 200 K bits/sec bandwidth. Find the throughput if the system produces. **(06 Marks)**
   i) 1000 Frames per second   ii) 500 Frames per second   iii) 250 Frames per second.

   c. Describe Gigabit Ethernet. **(04 Marks)**

OR

8 a. Describe Pure ALOHA and Slotted ALOHA. **(04 Marks)**

   b. Explain briefly controlled access method. **(06 Marks)**

   c. Define Bluetooth and its architecture. **(06 Marks)**

Module-5

9 a. Write a short note on Satellite networks. **(04 Marks)**

   b. Explain the Operation of cellular telephony. **(06 Marks)**

   c. Explain Transition from IPV4 to IPV6. **(06 Marks)**

OR

10 a. Explain the working of mobile I_p with phases. **(08 Marks)**

   b. Explain IP datagram header format, with neat diagram and give the description of each field. **(08 Marks)**

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