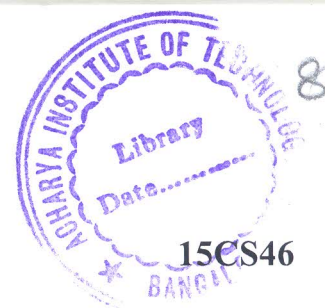USN | | | | | | | | | |

15CS46

Fourth Semester B.E. Degree Examination, Dec.2019/Jan.2020
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. What in data communication? Explain data flow techniques of data communication.
                                                                            (05 Marks)
    b. Explain the functionalities of OSI reference model layers.   **(07 Marks)**
    c. What is physical and logical addresses in TCP/IP reference model.   **(04 Marks)**

OR

2   a. Explain period, frequency and phase of an periodic analog signal. For the given signal (sine wave) with offset 1/6 cycle with respect to time(0), find the phase of the signal, express phase in terms of degree and radiance.   **(05 Marks)**
    b. What are the causes for transmission impairments during signal transmission through channel?   **(05 Marks)**
    c. Draw line code for the sequence 010011001 using NRZ, Bipolar, Manchester and differential Manchester.   **(06 Marks)**

Module-2

3   a. Explain process–sampling with respect to PCM (Pwse code modulation)? Explain different types of sampling methods.   **(05 Marks)**
    b. What is parallel and serial data transmission? Explain the three ways, how the serial transmission is achieved.   **(05 Marks)**
    c. An analog signal with bit rate. 6000 bps and baud rate 1000 baud, find how many data elements are carried by each signal element? Also find how many signal elements are required.   **(06 Marks)**

OR

4   a. Explain the mechanisms for modulating digital data into analog signal (Data).   **(08 Marks)**
    b. Define multiplexing and de-multiplexing. With the diagram explain the Frequency Division. Multiplexing (FDM) technique.   **(08 Marks)**

Module-3

5   a. Find the code word for the following using CRC. Given information polynomial $i(x) = x^6 + x^3$ and generator polynomial $g(x) = x^3 + x + 1$.   **(06 Marks)**
    b. Explain the working of any two protocols of noisy channels.   **(10 Marks)**

OR

6   a. Explain frame types of HDLC.   **(05 Marks)**
    b. Explain PPP protocol frame format, with the diagram. Also mention the different transition phases of PPP.   **(08 Marks)**
    c. What is framing in data lank layer, explain different techniques to identify frame boundaries.
                                                                            (03 Marks)

Module-4

7 a. What are ALOHA protocols? Explain its different types with respect to channel multiple accesses. **(06 Marks)**

   b. Explain channelization protocols for multiple access with diagram. **(10 Marks)**

OR

8 a. What is persistence methods? Explain the behavior of pernistance methods with diagram. **(06 Marks)**

   b. What is hidden and exposed station problem? Explain with the diagram. **(05 Marks)**

   c. What is Piconets and Scatternets? Explain the working with the diagram. **(05 Marks)**

Module-5

9 a. Write a note on IPV6 header format. **(10 Marks)**

   b. Explain mobile IP with phases. **(06 Marks)**

OR

10 a. What is routing of packets? With respect to data communication. Explain intra domain and inter domain routing techniques. **(10 Marks)**

    b. Write a note on multicast routing protocols. **(06 Marks)**

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