# CBCS SCHEME

USN | | | | | | | | | | 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)**

## 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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