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P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belgaum)

Fifth Semester, B.E. - Computer Science and Engineering

Semester End Examination; Dec. - 2014

Data Communication

Time: 3 hrs *Max. Marks: 100*

***Note**: i) Answer any **FIVE** full questions selecting at least **TWO** full questions from each part.*
ii) Assume suitable missing data if any.

PART - A

1. a. Explain Network Criteria. 5

   b. Explain the functions of Data link layer in OSI. 5

   c. With neat diagram of TCP/IP model along with protocols in each layer explain Network Layer-IP and its supporting protocols. 10

2 a. A sine wave is offset $\frac{1}{6}$ cycle with respect to time 0. What is its phase in degrees and radians? 3

   b. Write a note on base band transmission and broadband transmission. 10

   c. Explain Shannon capacity under noisy channel. Calculate the channel capacity of a telephone line which has a band range of 300 Hz to 3300 Hz and signal to noise ratio 3162. 7

3 a. Explain baseline wondering, DC components and self- synchronization. 8

   b. Define the following: (i) Data element (ii) Signal Element (iii) Data rate (iv) Baud rate 4

   c. Explain three processes of PCM with neat diagram. 8

4 a. Explain how light rays travel through optical fiber with neat diagram. Also explain its propagation modes. 10

   b. Explain with a neat diagram three phases of virtual circuit network. 10

PART - B

5 a. Given the dataword 1010011010 and the divisor 10111 .Using polynomial method
   (i) Show the generation of the codeword at the sender site
   (ii) Show the checking of the codeword at the receiver site 10

   b. Explain how internet checksum is calculated at sender site and error detection done at receiver site considering text of 8 characters “Forouzan”. 10

6 a. Explain Go-back-N Automatic repeat request with neat diagram of send window and receiver window. 10

   b. Explain with diagrams HDLC- configurations and transfer modes and HDLC-frames. 10

7 a. Explain Channelization access methods. 12

   b. Write a note on data link layer in IEEE standard. 8

8 a. What is Bluetooth? Explain two types of networks under Bluetooth. 8

   b. Explain the connecting devices: (i) Passive hub (ii) Hub (iii) Repeater
   (iv) Bridge (v) Router (vi) Gateway. 12

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