Fifth Semester B.E. Degree Examination, Dec.2014/Jan.2015
Computer Networks – I

Time: 3 hrs.

Max. Marks:100

Note: *Answer any FIVE full questions, selecting*
atleast TWO questions from each part.

PART – A

1 a. What are the components of data communication system? Explain in brief. **(05 Marks)**
  b. With a neat diagram, explain the interaction between layers in the OSI model. **(10 Marks)**
  c. What is the difference between a physical and logical address? Explain with example. **(05 Marks)**

2 a. Distinguish between low pass channel and a band pass channel. **(06 Marks)**
  b. A network with bandwidth of 10Mbps can pass only an average of 18,000 frames per minute with each frame carrying an average of 10,000 bits. What is the throughput of this network? **(04 Marks)**
  c. Compare and contrast between PCM and DM. **(06 Marks)**
  d. Explain polar biphase Manchester and differential Manchester encoding schemes with example. **(04 Marks)**

3 a. Explain following modulation techniques:
      i) Amplitude modulation
      ii) Frequency modulation. **(06 Marks)**
  b. A multiplexer combines four 100kbps channels using a time slot of 2 bits. Show the output with four arbitrary inputs. What is the frame rate? What is the frame duration? What is the bit rate? What is the bit duration? **(04 Marks)**
  c. With relevant diagrams, explain the data transfer phase in a virtual circuit network. **(10 Marks)**

4 a. Explain CRC error detection method with an example. **(06 Marks)**
  b. Explain the structure of encoder and decoder for a Hamming code. **(04 Marks)**
  c. What is internet checksum? If a sender needs to send four data items 0×3456, $0 \times ABCC$, $0 \times 02BC$ and $0 \times EEEE$, answer the following:
      i) Find the checksum at sender site.
      ii) Find the checksum at receiver's site if there is no error. **(10 Marks)**

PART – B

5 a. Explain GO-BACK-N ARQ and selective-repeat-ARQ. List the differences between them. **(10 Marks)**
  b. Explain the different frame types in HDLC. **(06 Marks)**
  c. Write a short note on piggybacking. **(04 Marks)**

6 a. With a flow diagram, explain the working of CSMA/CD. **(10 Marks)**
  b. Explain the following channelization techniques: i) TDMA   ii) CDMA. **(10 Marks)**

7   a. What do you mean by hidden and exposed station problems in IEEE 802.11 protocol. Explain in detail. **(06 Marks)**

      b. With neat diagram, explain the architecture of Piconet and Scatternet Bluetooth networks. **(06 Marks)**

      c. Explain the working of global system for mobile (GSM) in detail. **(08 Marks)**

8   a. Explain IPV_6 header format with its extension headers. **(10 Marks)**

      b. Write short note for following:

         i)   Token passing

         ii)   Gigabit Ethernet

         iii)   Polling

         iv)   FHSS. **(10 Marks)**

* * * * *