

Total No. of Questions :6]

SEAT No. :

**P5695**

[Total No. of Pages : 3

**TE/INSEM./OCT.-141**

**T.E. (Computer Engineering)**

**COMPUTER NETWORKS**

**(2015 Course) (Semester - I)**

*Time : 1 Hour]*

*[Max. Marks :30*

*Instructions to the candidates:*

- 1) *Figures to the right indicate full marks.*
- 2) *Draw neat diagrams whenever necessary.*
- 3) *Assume Suitable data, if necessary.*

- Q1)** a) Match the following to one or more layers of the OSI model [3]
- i) Transmission of bit stream across physical medium.
  - ii) Defines Frames.
  - iii) Error correction and retransmission.
  - iv) Reliable Process-to-process message delivery.
  - v) Route selection.
  - vi) Provides user services such as e-mail and file transfer.
- b) Define FHSS and explain how it achieves bandwidth spreading. [5]
- c) What are the three major classes of guided media. [2]

OR

- Q2)** a) What is the difference between a port address, a logical address and a physical address. [2]
- b) For the bit sequence 10000101111 draw the waveform for [4]
- i) Manchester Encoding
  - ii) Differential Manchester Encoding.
- c) Explain in short, various networking devices Bridge, switch, Router and Access point. [4]

**P.T.O.**

- Q3)** a) Compare and contrast the Go-Back-N ARQ protocol with Selective-Repeat ARQ. [4]
- b) Explain PPP in detail. [4]
- c) What are various design issues of data link layer. [2]

OR

- Q4)** a) Explain the working of Cyclic Redundancy Check (CRC) using the following. Example (show the complete steps of division) [4]

Data bits: 1101110110

Generator Polynomial:  $X^3 + X + 1$

Write the redundant bits that will be sent along with the data bits.

Suppose the 2nd bit from the left is inverted during transmission. Show that error is detected at the receiver's end.

- b) Explain control field of HDLC w.r.t 1-frame, S-frame and U-frame. [6]
- Q5)** a) Measurement of a slotted ALOHA channel with an infinite number of users, show that 10 percent of the slots are idle: [5]
- i) What is the channel load?
- ii) What is the throughput?
- iii) Is the channel underload or overloaded?
- b) Explain 802.3 MAC frame format. [3]
- c) Draw flowchart for CSMA/CA. [2]

OR

- Q6)** a) Explain 802.11 Wireless LAN frame format. [4]
- b) A slotted ALOHA network transmits 200-bit frames using a shared channel with a 200- kbps bandwidth. Find the throughput if the system (All stations together) produces. [4]
- i) 1000 frames per second
  - ii) 500 frames per second
- c) What are various common Fast Ethernet implementations? [2]

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