

## JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

## MID SEMESTER EXAMINATION-2015

B.Tech 6<sup>th</sup> Semester

COURSE CODE: 10B11CI611

MAX. MARKS: 30

COURSE NAME: Computer Networks

COURSE CREDITS: 4

MAX. TIME: 2 HRS

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*Note: All questions are compulsory.*

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**Section A****(Marks: 1x6=6)**

1. What are two reasons for using layered protocols?
2. What advantage does a circuit-switched network have over a packet-switched network?
3. Define Bit stuffing?
4. Data link protocols almost always put the CRC in a trailer rather than in a header. Why?
5. In OSI Model, error control is carried out by the number of data link layers and transport layers. Justify the need for error control at so many stages and levels.
6. What is the difference between port address, logical address and physical address?

**Section B****(Marks: 3x3=9)**

1. Define biphas encoding and describe two biphas encoding technique in detail by giving their advantages and disadvantages over other digital to digital encoding technique?
2. What is the average number of transmissions required to send a frame of length 1200 bytes correctly, if the bit error rate is  $1 \times 10^{-6}$ ?
3. A baseband bus of length of 1km operates at 10mbps. What is the time required to send a frame of 1000 bits from station A at one end of the bus to the other end of the bus?

**Section C****(Marks: 5x3=15)**

1. Consider an application that transmits data at a steady rate (e.g., the sender generates one packet of N bits every k time units, where k is small and fixed). Also when such an application starts, it will stay on for relatively long period of time.
  - a) Would a packet-switched network or a circuit-switched network be more appropriate for this application? Why?

- b) Suppose that a packet-switched network is used and the only traffic in this network comes from such applications as described above. Furthermore, assume that the sum of the application data rates is less than the capacities of each and every link. Is some form of congestion control needed? Why or why not?
2. Describe HDLC in detail.
  3. What is flow control? Describe sliding window flow control and hence determine its advantages over stop and wait flow control.

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