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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST - 1 EXAMINATION-February2020

B.Tech VI Semester

COURSE NAME:Computer Networks

MAX. MARKS: 15

COURSE CODE:10B11CI611

COURSE CREDITS: 4

MAX. TIME: 1Hr

*Note: All questions are compulsory.*

1. [ 1.5 + 1.5 Marks]

- a) Suppose that between a sending host and a receiving host there is exactly one packet switch. The transmission rates between the sending host and the switch and between the switch and the receiving host are  $R_1$  and  $R_2$ , respectively. Assuming that the router uses store-and-forward packet switching, what is the total end-to-end delay to send a packet of length  $L$ . (Ignore queuing and propagation delay.)
- b) Suppose you are developing a standard for a new type of network. You need to decide whether your network will use Virtual Circuits (VCs) or datagram routing. What are the pros and cons for using VCs?

2. [ 1.5 + 1.5 Marks]

- a) Suppose you are developing an application for the Internet. Would you have your application run over TCP or UDP? Elaborate.
- b) Draw the graph of the NRZ-I scheme for **01010101** data stream assuming that the last signal level has been positive.

3. [ 1.5 + 1.5Marks]

- a) Which of the three multiplexing techniques is (are) used to combine digital signals?
- b) Three packet-switching networks each contain  $n$  nodes. The first network has a star topology with a central switch, the second is a (bidirectional) ring, and the third is fully interconnected, with a wire from every node to every other node. What are the best-, average-, and-worst case transmission paths in hops?

4. [ 3 Marks]

An 8-bit byte with binary value 10101111 is to be encoded using an even-parity Hamming code. What is the binary value after encoding?

5. [ 3 Marks]

Design a bidirectional algorithm for the Simplest Protocol using piggybacking. Note that both parties need to use the same algorithm.