JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2016

B.Tech VI Semester (CSE & IT)

COURSE CODE: 10B11CI611   MAX. MARKS: 15

COURSE NAME: Computer Networks

COURSE CREDITS: 04   MAX. TIME: 1 HR

Note: All questions are compulsory. Carrying of mobile phone during examinations will be
treated as case of unfair means.

Section A   6*1

Ques. 1 (a) Make a list of activities that you do every day in which computer networks are used. How would your life be altered if these networks were suddenly switched off?

(b) List four ways in which the OSI reference model and the TCP/IP reference model are differ.

(c) Compare and contrast a circuit-switched network and a packet-switched network.

(d) Sketch the Manchester encoding and differential Manchester encoding for the bit stream: 1101000000000010.

(e) How is the wastage of bandwidth in synchronous TDM overcome by Asynchronous TDM?

(f) Define the terms bandwidth, jitter, throughput and bandwidth-delay products in network environments with suitable example.

Section B   3*3

Ques. 2 Explain any two analog-to-analog techniques? We have sampled a low-pass signal with a bandwidth of 200 KHz using 1024 levels of quantization. a. Calculate the bit rate of the digitized signal. b. Calculate the SNR dB for this signal.

Ques. 3 We need a three-stage space-division switch with N =100. We use 10 crossbars at the first and third stages and 6 crossbars at the middle stage. a. Draw the configuration diagram. b. Find the possible number of simultaneous connections. (c) Redesign the configuration of the above question using the Clos criteria.

Ques. 4 Following are the parameters for a switching network: N = number of hops between two given end systems, L = message length in bits, B = data rate, in bits per second (bps), on all links, P = fixed packet size, in bits, H = overhead (header) bits per packet, S = call setup time (circuit switching) in seconds, D = propagation delay per hop in seconds. For N = 4, L = 3200, B = 9600, P = 1024, H = 16, S = 0.2, D = 0.001 (a) compute the end-to-end delay for circuit switching (b) datagram packet switching (c) virtual circuit switching. Assume there are no acknowledgements. Ignore processing delay at the nodes.