JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY WAKNAGHAT

T-1 EXAMINATION (FEBRUARY 2019)

B.Tech 6th Sem. (ECE)

COURESE CODE: 10B11EC611   MAX. MARKS: 15

COURSE NAME: Telecommunication Networks

COURSE CREDITS: 4   MAX. TIME: 1 Hr.

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

Q1. Define topology. Draw and discuss the basic network topologies. Also compute the number of cable links required in each topology assuming n devices in a network.   CO-1   (1+2=3)

Q2. In figure 1, computer A sends a message to computer D via LAN1, router R1, and LAN2. A process with port address i is running at computer A and a process with port address j is running at computer D. Show the contents of packets and frames at the transport layer and data link layer for each hop.   CO-1   (1.5)
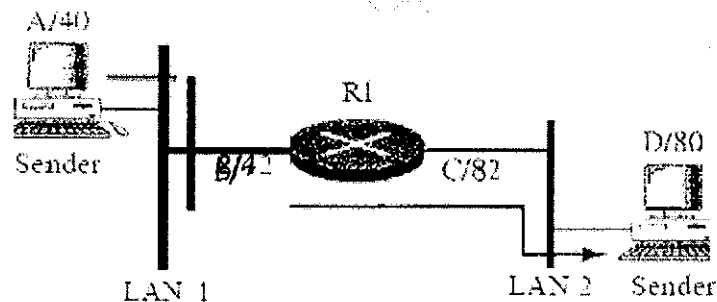

Figure 1

Q3. Discuss with example the ways to handle data rate disparity in the input data rates in time division multiplexing.   CO-2   (1.5)

Q4. 25 digital sources each of 1 Mbps capacity are to be multiplexed using synchronous TDM. Each output slot carries 2 bits from each digital source, and one extra bit is added to each frame for synchronization. Answer the following questions:
a) What is the output frame rate?
b) Size of an output frame in bits.
c) Transmission rate of the link.
d) Efficiency of the system (ratio of the useful bits to the total bits).
          CO-2   (0.5+1+0.5+1=3)

Q5 (a). Define switch and the need of switching.   CO-3   (1)

Q5 (b). Discuss the advantages and disadvantages of circuit-switched network and packet-switched network over one another.   CO-3   (2)

Q6. We need to have a space-division switch with 5000 inputs and outputs. What is the total number of crosspoints in each of the following cases?

a) Using one single crossbar.
b) Using a multi-stage switch based on the Clos criteria.
c) Draw the configuration diagram with values obtained in part b.

CO-3   **(0.5+1.5+1=3)**