

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
MAKEUP EXAMINATION (May 2016)
B.Tech. CSE & IT (Semester VI)

Course Code: 10B11CI611
Course Name: Computer Networks
Course Credit: 4

Max. Marks: 25

Max. Time: 1:30 Hrs

Attempt all questions. Carrying of mobile phones will be treated as the case of unfair means. Calculator is allowed.

Ques 1. [Marks 5] Explain the functionalities of different OSI layers in brief? Also, discuss the design issues for the physical, data link and network layer?

Ques 2. [Marks 5] Which of the three multiplexing techniques is (are) used to combine digital signals? Explain in brief? Figure 1 shows synchronous TDM with a data stream for each input and one data stream for the output. The unit of data is 1 bit. Find (a) the input bit duration, (b) the output bit duration, (c) the output bit rate, and (d) the output frame rate.

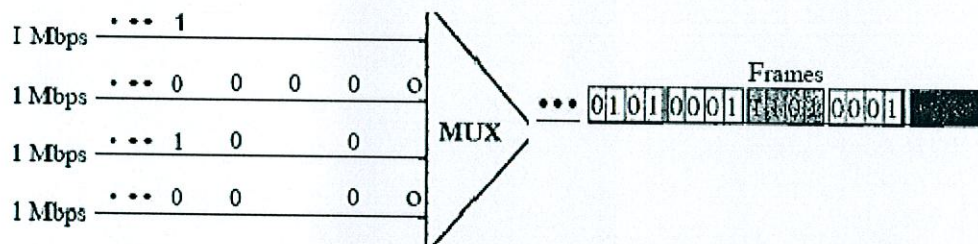


Figure 1. Synchronous TDM

Ques 3. [Marks 5] Design a bidirectional algorithm for selective repeat protocol using piggybacking. A channel has bit rate of 20 kbps. Using stop and wait protocol with frame size of 4500 bits. The delay for error detection and sending ACK by the receiver is 0.25 second because of the fault. Find the maximum efficiency of the channel if the destination is 30,000 km away and the speed of the propagation of the signal is 2×10^8 m/s. Find the decrease in efficiency due to fault.

Ques 4. [Marks 10] Write the short note on following:

- (a) Controlled Access protocol
- (b) Switching Techniques
- (c) Byte-oriented protocol
- (d) Network Address Translation