JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST-1 EXAMINATION- 2024

B.Tech-VI Semester (CSE/IT)

COURSE CODE (CREDITS): 18B11CI611 (03)   MAX. MARKS: 15

COURSE NAME: Computer Networks

COURSE INSTRUCTORS: Dr. (Amit, Pankaj, Nishant), Mr Aayush   MAX. TIME: 1 Hour

Note: (a) All questions are compulsory.

(b)Marks are indicated against each question in square brackets.

(c) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

Q1. [CO1] [CO2]
o Imagine you must transmit 30 pixels wide and 30 pixels in length images over 30 frames per second. Each pixel is 27 bits in size and the signal used consists of 32 signal levels. Calculate how much bandwidth is required to transmit the video signal. Consider Nyquist bit rate and noiseless channel.   **3**

o What are the different transmission impairments that can occur during this transmission (Give names with one line statement only)?

Q2. [CO2]
Encode the following bit sequence with NRZ-L, NRZ-I, RZ, Manchester and Differential Manchester 1 0 1 1 0 0 0 1.   **3**

Q3. [CO2]
A channel has a bit rate of 4 Kbps and a one-way propagation delay of 20 msec. The channel uses the stop-and-wait protocol. The transmission time of the acknowledgment frame is negligible. To get a channel efficiency of at least 50%, the minimum frame size should be?   **3**

Q4. [CO2]
Four 1-kbps connections are time-multiplexed. A unit is 1 bit. Find   **3**
(1) the duration of 1 bit before multiplexing,
(2) the transmission rate of the link,
(3) the duration of a time slot, and
(4) the duration of a frame.

Q5. [CO3]
Suppose the Sender Window size is 7 and the number of packets is 10. Then out of these 10 packets, every 5th packet is lost. Find out how many packets will be sent in total using the Gob-Back-N protocol.   **3**