JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST -2 EXAMINATION- 2024
B.Tech-VI Semester (CSE/IT/ECE/CE)

COURSE CODE(CREDITS): 18B11CI611 (03)

COURSE NAME: Computer Networks

MAX. MARKS: 25

COURSE INSTRUCTORS: Dr. (Amit, Pankaj, Nishant), Mr Aayush   MAX. TIME: 1,30 Mins

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. [CO3]	a.	Discuss the concept of Bit Stuffing and Byte Stuffing. Show the frame which is sent and received by DLL when the data from upper layer is as follows: 00011111111001111101000.	3
	b.	Find the CRC which is appended in the dataword: 1001 and Divisor: 1011	3

Q2.
[CO4]
	a.	An organization is granted the block 16.0.0.0/8. The administrator wants to create 500 fixed-length subnets.
		  i. Find the subnet mask.
		  ii. Find the number of addresses in each subnet.
		  iii. Find the first and last addresses in subnet 1.
		  iv. Find the first and last addresses in subnet 500.	

	b.	An Internet Service Provider (ISPP) has the following chunk of CIDR-based IP addresses available with it: 245. 248.128.0/20. The ISP wants to give half of this chunk of addresses to Organization A, and a quarter of Organization B, while retaining the remaining with itself. Which of the following is a valid allocation of addresses to A and B?	
Q3. [CO4]		Imagine a scenario where a large file transfer is occurring between a client and a server. A number of switches and other devices are involved in the route thus inducing different delays. Delay occurring due to pushing all bits on to the link is 1 msec/kb . Intermediate nodes such as routers and switches take 1 msec to process each packet. Each packet takes time of 2 msec/km to reach its destination from source. In addition to this, each packet spends 0.5 msec waiting at intermediate nodes. If client and server are 100 kilometers apart with 5 intermediate nodes between them and file to be transferred is 10 MB, calculate total end-to-end delay occurred during file transfer.	6
Q4. [CO3]	a.	Difference between CSMA/CD and CSMA/CA?	2

	b.	A pure ALOHA network transmits 200-bit frames on a shared channel of 200 kbps. What is the throughput if the system (all stations together) produces
		  i. 250 frames per second?
		  ii. 1000 frames per second?
		  iii. 500 frames per second?
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