SVKM's NMIMS
MUKESH PATEL SCHOOL OF TECHNOLOGY MANAGEMENT & ENGINEERING /
SCHOOL OF TECHNOLOGY MANAGEMENT & ENGINEERING

Academic Year: 2022-23

Programme: MCA   Year: I   Semester: I

Subject: Computer Networks

Date: 12 December 2022

Marks: 100
Time: 10.30 am - 01.30 pm
Durations: 3 (Hrs)
No. of Pages: __2__

Final Examination

Instructions: Candidates should read carefully the instructions printed on the question paper and on the cover of the Answer Book, which is provided for their use.

1) Question No. _1___ is compulsory.
2) Out of remaining questions, attempt any __4___ questions.
3) **In all ___5_ questions to be attempted.**
4) All questions carry equal marks.
5) **Answer to each new question to be started on a fresh page.**
6) **Figures in brackets on the right hand side indicate full marks.**
7) **Assume Suitable data if necessary.**

Q1			Answer briefly:	[20]
CO-1; SO-; BL-2	a.		Draw and explain briefly the need for the layered architecture of computer networks.	[05]
CO-2; SO-; BL-2	b.		Identify any three characteristics that are used to identify the Quality of Service of network traffic. Briefly explain.	[05]
CO-4; SO-; BL-3	c.		With the help of diagrams, illustrate any two problems of the simple stop-and-wait protocol.	[05]
CO-3; SO- ; BL-3	d.		A block of addresses is granted to a small organization and one of the addresses is 205.16.37.25/28. What are the first address and last addresses in the block? Find the number of addresses in the block. Show all steps of calculation.	[05]
Q2 CO-1; SO-; BL-2	a.		Explain briefly Fiber Optic Cable as a transmission media. Write any 3 advantages and disadvantages of Fiber Optic Cable.	[10]
CO-2; SO-; BL-3	b.		When a station sends data, another station might attempt to do it simultaneously. How is this handled in Pure ALOHA? Draw and explain the procedure for Pure ALOHA Protocol.	[10]
Q3 CO-3; SO-; BL-3	a.		Explain the two-node instability problem. Suggest one solution to solve this problem. Briefly explain.	[10]

CO-1; SO-; BL-2	b	Distinguish between Frequency Division Multiplexing and Time Division Multiplexing. Write five points for each.	[05]
CO-1; SO-; BL-4	c	A sender needs to transmit message M= 11000 and decide to adopt a cyclic redundancy-based error-detecting scheme having the generator polynomial X^3+X+1. Calculate the final message that is transmitted after appending the CRC bits.	[05]
Q4 CO4-; SO-; BL-2	a.	Explain the operation of UDP for delivering messages. Briefly explain any two uses of UDP.	[10]
CO-2; SO-; BL-4	b.	A slotted ALOHA network transmits 400-bit frames using a shared channel with a 400- Kbps bandwidth. Find the throughput if the system (all stations together) produces 1000 frames per second.	[05]
CO-1; SO-; BL-2	c.	Explain the advantages and disadvantages of the Frequency Hopping Spread Spectrum and Direct Sequence Spread Spectrum technique briefly. Write four points each. Write any one applications of each.	[05]
Q5 CO-3; SO-; BL-4	a.	An organization is allotted an IP address of 20.30.40.10/25. The organization has four buildings and network decided to create four subnets for 4 buildings. Design the four subnets for four buildings. Write the starting address, ending address, address range and subnet mask for each building.	[10]
CO-4; SO-; BL-3	b.	Compare and Contrast Flat Name Space and Hierarchical Name Space. Explain briefly domain name space and its constituents.	[10]
Q6 CO-3; SO-; BL-2	a.	Explain Routing Information Protocol. Draw RIP Request Message Format. Briefly explain the different types of timers used in RIP.	[10]
CO-;1 SO-; BL-2	b.	Explain in detail the different classifications of Computer Networks.	[10]
Q7 CO-2; SO-; BL-	a.	Explain the working of CSMA/CA with a diagram. Justify its need in wireless networks.	[10]
CO-1; SO-; BL-2	b.	Explain in detail the network topologies with the help of diagrams. Briefly explain two advantages and disadvantages of each topology.	[10]

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