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December 2023 (REEXAM)

TY (COMPUTER ENGINEERING)

(AY 2023-24 SEMESTER - I)

COURSE NAME: COMPUTER NETWORKS –I **COURSE CODE: CSUA31203**

(PATTERN 2020)

Time: [2 Hrs] **[Max. Marks: 60]**

Instructions to candidates:

1) **Figures to the right indicate full marks.**
2) **Use of scientific calculator is allowed.**
3) **Use suitable data wherever required.**
4) **All questions are compulsory. Solve any two sub questions each from each Question 1, 2, 3, 4, 5 and 6 respectively.**

Q. No.	Question Description	Max. Marks	CO mapped	BT Level
Q.1	a) Describe fiber optic cabling and its main advantages over other media.	[5]	[CO1]	[Level 4 Analyze]
	b) Compare the packet-switched network and circuit-switched network.	[5]	[CO1]	[Level 4 Analyze]
	c) Discuss the working of Internet. Differentiate between LAN, MAN and WAN.	[5]	[CO1]	[Level 4 Analyze]
Q2	a) Differentiate between Port Addresses and Specific Addresses. Why Port Addresses and Specific Addresses are much needed in communication.	[5]	[CO2]	[Level 4 Analyze]
	b) Differentiate between TCP/IP and OSI model of communication.	[5]	[CO2]	[Level 4 Analyze]
	c) Examine the process of rule establishment during communication. How rules or protocols ensure the message to be successfully delivered and understood at destination.	[5]	[CO2]	[Level 4 Analyze]
Q3.	a) For given IPv4 address 110.110.100.0 /23 Calculate: I. Network Address and Broadcast Address. II. How many Total Host Addresses possible? III. If we make 8 sub-networks then what will be each subnetwork's IP address ranges? IV. What will be first usable and last usable IP address	[5]	[CO3]	[Level 4 Analyze]

	in 5th Subnet? b) For given IPv4 address 111.123.16.0 /22 Calculate: I. Network Address and Broadcast Address. II. How many Total Host Addresses possible? III. If we make 4 sub-networks then what will be each sub-network's IP address ranges? IV. What will be 5th usable and last usable IP address in 3rd Subnet? c) Subnet the Class C IP Address 205.11.2.0 so that you have 30 subnets. I. What is the subnet mask for the maximum number of hosts? II. How many hosts can each subnet have? III. What is the IP address of host 3 on subnet 2?	[5] [5]	[CO3] [CO3]	[Level 4 Analyze] [Level 4 Analyze]
Q.4	a) Justify the use of TCP for E-mail application and use of UDP for Video Conferencing. b) Differentiate between TCP and UDP along with their header diagram. c) If a user 1 sends an email to user 2 then which application layer protocols will be used during communication. Mention protocols working in sequence?	[5] [5] [5]	[CO4] [CO4] [CO4]	[Level 4 Analyze] [Level 4 Analyze] [Level 4 Analyze]
Q.5	a) Define the Digital Signature? Describe the various steps followed in creating digital signature. b) Explain the step by step working of SHA algorithm. c) Explain the step by step working of MD5 algorithm.	[5] [5] [5]	[CO5] [CO5] [CO5]	[Level 1 Remember] [Level 1 Remember] [Level 1 Remember]
Q.6)	a) In RSA algorithm if p=7, q=11 and e=13 then what will the value of d? b) Analyze which hash functions is the best for providing security? c) User A and user B agree on 7 as the modulus and 3 as the primitive root. User A chooses 2 and user B chooses 5 as their respective secrets. Calculate the common secret key using the Diffie Hellman key exchange technique.	[5] [5] [5]	[CO6] [CO6] [CO6]	[Level 4 Analyze] [Level 4 Analyze] [Level 4 Analyze]