

COMSATS University Islamabad, Lahore Campus

Final Examination-Semester Fall 2022				
Course Title:	Data Communications and Computer Networks		CSC339	Credit Hours: 3(2,1)
Course Instructor/s:	Mr. Imran Raza, Dr. Shahbaz Akhtar Abid, Dr. Tahir Maqsood	Program Name:	BS Computer Science, BS Software Engineering	
Semester:	5th Batch: FA20 Section:	All sections	Date:	27-01-2023
Time Allowed:	3 Hours	Maximum M	arks:	100
a. How does Explain its Explain will can achieve. C. Discuss prod. Identify the E. Consider a become a trend chunk? In Discuss the in pure AL. Suppose Datagg (including head and Destination is required to seare generated, the The network control of the the product of the product of the product of the much time is non-persister. The same by the requesting allowed? Consider two 16-1110011 Apply checksum word are flipped.	the head-of-line (HOL) blocking problem af impact using an example scenario and illustry Traffic Engineering is difficult in tradition of eoptimal routing using the control/data plane oblems with IP Fragmentation & reassembly advantages and disadvantages of Network and new peer Ali that joins BitTorrent without op-four uploader for any of the other peers single efficiency of pure ALOHA. Illustrate how to OHA and how that problem is resolved in slowards are limited to 1000 bytes (including heater) between Router X and Router Y and the B. Assume an IP header of size 20 bytes. In the side of the datagram and the sizes, and all the key fields of the datagram and the local DNS having a delay the trequested web page. The IP address of the stop be performed to get the IP address. Ass NS. DNS_1 is the local DNS having a delay the trequested web page consists of some sign host is RTT_HTTP = 26 msec. [CLO:1, 2] web page (including HTML text) reference required to receive the base HTML and the last HTTP and no parallel TCP connections? scenario above, how much time is required that HTTP and parallel TCP connections? Scenario above, how much time is required to the given data words at the sender side. A Verify the given data at the receiver side and ork scenario given below: [CLO:1, 2; 2;	ffect the performance rate its solution incompal networking. However, and networking in the interaction. Also, propose an analysis of the possessing any clare he has nothing to the frame overlappin of the frame overlappin overlappin of the frame overlappin	ce of HT orporated w Softwar S	in HTTP 2.0. re Defined Networking (Stree Defined Networking Networ

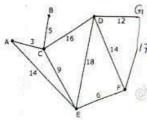
Consider the network scenario given below: [CLO:1, 2; Bloom Taxonomy Level:<Understanding, Applying>] [15]

a. Show the operation of Bellman Ford's (Distance Vector) algorithm for computing the least cost path from F to all destinations. Only compute the table of F. (5)

b. Identify the path with the "count to infinity" problem and discuss its impact on the convergence of the algorithm in case of a change in the link cost. Why? Will it be resolved on its own? Assume that the poison reverse is not in use.

c. Define Spanning Tree formally. Build a Minimum Spanning Tree (MST) at node F to all nodes in the given network.

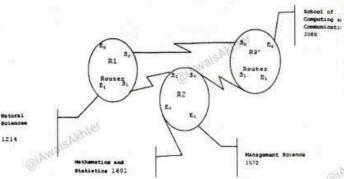
(5)



6. COMSATS University Islamabad is granted a block of addresses starting with 162.10.0.0/16. You are required to distribute these blocks to different schools/departments as per their requirements given in the following scenario. CUI

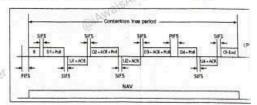
is also planning to open two new schools requiring 512 and 1000 nodes, respectively. [CLO:1, 2; Bloom Taxonomy Level:<Understanding, Applying>] [15]

- Would you prefer using VLSM or FLSM for the given scenario? (1)
- Identify the total number of required subnets considering the expansion plan.
- c. What is the subnet mask of each subnet?
 (5)
- d. List down the subnet ids and host address range of all the subnets. (5)



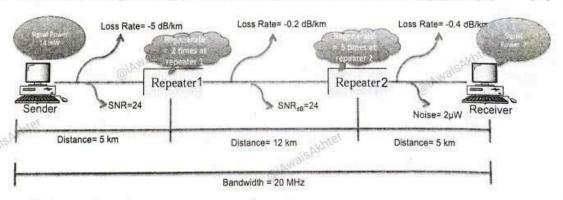
Part-B (Attempt any two questions)

- 7. Consider the WLAN scenario given below: [CLO:1, 2; Bloom Taxonomy Level: < Understanding >]
 - Explain the coexistence of the Point Coordination Function (PCF) and Distributed Coordination Function (DCF). (4)
 - b. How is it ensured that PCF is always a contention-free period?
 - c. In the PCF period, how an Access Point (AP) responds if it doesn't receive an ACK for a transmitted data frame? (4)



[10]

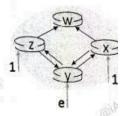
8. Consider the scenario given below: [CLO:1, 2; Bloom Taxonomy Level: < Understanding, Applying >]



- a. Calculate the signal power at the receiver in milliwatts.
- b. What are the values of SNR and SNR_{dB} in the link between repeater-2 and receiver?
- c. The link between the sender and receiver has a bandwidth of 20MHz. Answer the followings
 - i. What is the maximum bit rate
 - ii. How many signal levels are required to achieve the bit rate calculated in part I?

9. [CLO: 1-4; Bloom Taxonomy Level: <Remembering, Understanding, Analysing>] [10]

Assume for a given scenario, link costs depend on traffic volume and routing to destination 'w' traffic entering at 'z', 'y', and 'x' with rates 1, e (<1), 1, respectively. Illustrate the routing oscillation problem in Link State Routing and what could be possible solutions for this problem.



(3)

(3)

(4)

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