COMSATS University Islamabad, Lahore Campus

Sessional-I – Semester Fall 2020

Course Title:	Data Communications and Computer Networks			Course Code:	CSC339	Credit Hours:	3(2,1)
Course Instructor/s:	Mr. Imran Raza			Program Name:	BS Computer Science		
Semester:	5th	Batch:		Section:	B	Date:	
Time Allowed:	**1 Hour**			**Maximum Marks:**	**25**		

1. Answer the following short questions: [10]

a. Discuss how overlay networks improves the average running time in Distributed Hash Tables (DHTs)? How the numbers of peers are decided to form an overlay network? (2)

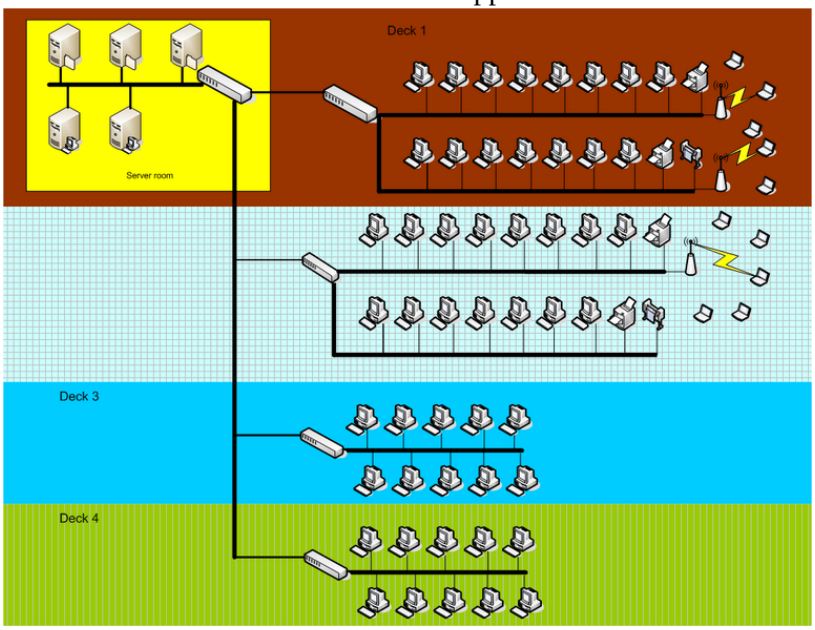
b. Consider a new peer Fatima that joins BitTorrent without possessing any chunks. Without any chunks, she cannot become a top-four uploader for any of the other peers, since she has nothing to upload. How then will Fatima get her first chunk? (2)

c. Compare recursive and iterative DNS queries. Discuss advantages and disadvantages of both with the help of a scenario. (2)

d. What are the advantages and disadvantages of having high degree of parallelism in HTTP? (2)

e. Discuss the advantages of using DHTs to create a distributed tracker for BitTorrent application. For these DHTs, what is the "key" and what is the "value"? (2)

2. Improve the given network blueprint modifying physical and logical arrangements, and network devices. Also, consider that users belong to three different groups demanding specific service provisions. [5]



3. Consider distributing a file of $F = 35$ Gbits to N peers. The server has an upload rate of u_s = 60 Mbps, and each peer has a download rate of d_i =4 Mbps and an upload rate of u. For N =50, 200, and 2,000 and u = 600 Kbps, 800 Kbps, and 4 Mbps, prepare a chart, similar to the one given below, giving the minimum distribution time for each of the combinations of N and u for both client-server distribution and P2P distribution. Also, discuss how the distribution time can be improved for client-server environment? [10]