National University of Computer and Emerging Sciences, Lahore Campus

Quiz ……2 [BSCS: Section D] Fall 2022

Computer Networks (Code: CS3001) **Quiz Date: September 21, 2022**

Total Marks: 10 **Duration: 15 -Minutes**

Name ---------- Roll #---------- Section --------

Instructions: Attempt all questions on this sheet. You can make use of rough sheet (do not attach to this sheet).

Q1: We observe an increase in the total delay (time) for those requests that encounter a web cache (a penalty because of the involvement of the cache). Let LD be the average LAN delay, ALD be the access link delay, ID be the Internet delay, and RT be the total response time. Moreover, assume that ACP is the average cache penalty delay. The following values are given LD = 10ms, ALD = 50ms, ID = 100ms, and ACP = 20 ms. Considering the above scenario and given values, answer the following questions: (4 + 6 = 10 Marks) **[CLO 4]**

(A)Find the average response time, TR, without use of cache?

Solution:

No cache: average response time = TR = LD + ALD + ID, thus RT = 10 + 50 + 100 = 160ms

(B) Find the average response delay (time) when a cache is used and the hit ratio is 80%?

Solution: Solution: Cache and hit time + Cache and miss time i.e.:

RT = [0.8 * (LD + ACP)] + [0.2 * (LD+ALD+ID+APC)]

RT = [0.8 * (10 + 20)] + [0.2 * (10 + 50 + 100 + 20)] = 0.8 × 30 + 0.2 × 180 = 24 ms+ 36ms = 60 ms