United International **University** (**UIU**)

Dept. of Computer Science and Engineering (CSE)

MidTerm Assessment Year: **2023** Semester: **Fall**

Course: **CSE 323** Title: **Computer Networks (Section – ALL)**

Marks: **30** Time: **1 Hour 45 minutes**

[Any examinee found adopting unfair means will be expelled from the trimester/program as per UIU disciplinary rules.]

There are **3 (Three)** questions. Answer **all 03 questions**. All questions are of values indicated on the right-hand margin.

Q1.

a) Draw a diagram showing the five layers of the TCP/IP model and mention an example of TCP/IP protocol suite for each layer. Then describe the primary function of each of the layers. Moreover, with the aid of diagrams, compare the OSI and TCP/IP layered models.

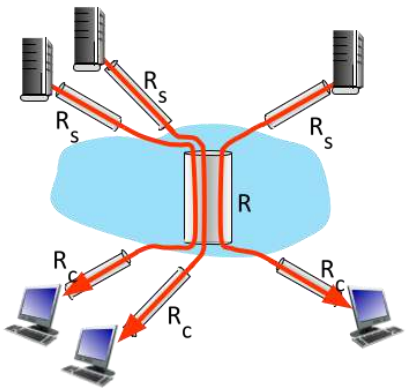
[2 + 1 + 1]

b) What is an ISP? What is the role of ISPs in forming the Internet? **[1.5]**

c) What is packet loss? Mention two reasons why packet loss may occur in a network. **[1.5]**

d) Suppose a host wants to send a packet of length **2KB** onto an optical fiber link of distance **1,000 km**, propagation speed **2.5 x 10^8 m/s**, and transmission rate **2 Mbps**. Calculate the propagation delay, transmission delay and the total nodal delay. **[2.5]**

e) Consider the following scenario, in which 5 connections share a backbone bottleneck link.



5 connections (fairly) share backbone bottleneck link *R* bits/sec

Here, the throughput of the bottleneck link is 10 Gbps, the throughput of the connections from servers to bottleneck link (R_s) is 512 Mbps and the throughput of the connections from clients to bottleneck link (R_c) is 100 Mbps. What will be the per-connection end-to-end throughput?

[2.5]

Q.2

a) Compare between application's architecture and the network architecture. There are the two predominant architectural paradigms that are used in modern network applications, what are they? Describe them briefly with proper example.

[2]

b) A user does the following in order: 1) logs into facebook.com 2) Browses bikroy.com for cars

3) Goes back to facebook.com 4) Sees ads of cars (sponsored posts). What possibly is allowing Facebook to track the user? Explain with a brief diagram.

[2]

c) You are sending a HTML file with 2 font files, 5 images. All files are small enough to fit in one TCP segment. How much time will be needed to send the files using persistent connection without pipe-lining?

[2]

d) Alice is visiting a static site (which rarely changes) that contains a lot of information about the galaxy. The server is located at a very distant location and the loading of the webpages is very slow. What Alice should tell her ISP to install to make the loading of the website faster? What she can do by herself?

[2]

e) You want to know the IP address of news.uiu.ac.bd (host IP Address: 3.4.5.6). The authoritative DNS server for uiu.ac.bd is dns.uiu.ac.bd (IP address: 4.5.6.7). How the DNS name will be resolved in iterated query approach? Show with diagram. Is iterated query approach better than recursive query? Compare these two.

[1+1+2 = 4]

Q.3

a) How do you describe logical communication? How does the transport layer provide logical communication between two processes? **[3]**

b) How do you differentiate between TCP and UDP? When would you use UDP for data communication and when would you use TCP instead? **[3]**

←End of Paper – Thank You→