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

Dept. of Computer Science and Engineering (CSE)

MidTerm Assessment Year: **2020** Semester: **Summer**

Course: **CSE 323** Title: **Computer Networks (Section – A/B/C)**

Marks: **20** Time: **1 Hour**

[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 3 (Three)** questions. All questions are of values indicated on the right-hand margin.

Q.1 a) Compare **circuit-switched network** and **packet-switched network** in terms of advantages and disadvantages. **[2]**

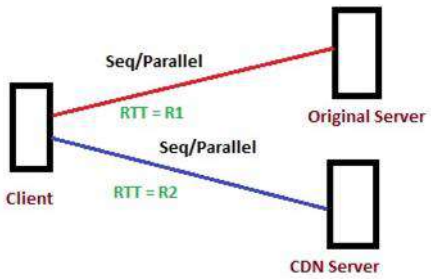
b) Consider a packet of **length L** which begins at end **system A** and travels over **three links** to a destination end system. These **three links** are connected by **two packet switches**, each of which has a **processing delay** of **10 ms**. Suppose, the packet length is **3000 bytes**, the **propagation speed** on all three links is **2.5×10^8 m/s**, the **transmission rates** of all three links are **1 Mbps**, the length of the first link is **2,000 km**, the length of the second link is **4,000 km**, and the length of the last link is **8,000 km**. Calculate the **end-to-end delay**. **[3]**

c) Write the name the **OSI layer** that does the following: **[3]**

i. Provides an interface to the end users.
ii. Formats, encodes and converts data to be used for use on the network.
iii. Logical addressing that routers will use for path determination.
iv. Reliable data transfer between two adjacent nodes.
v. Flow control between sender and receiver.
vi. Send the incoming segments to appropriate sockets.

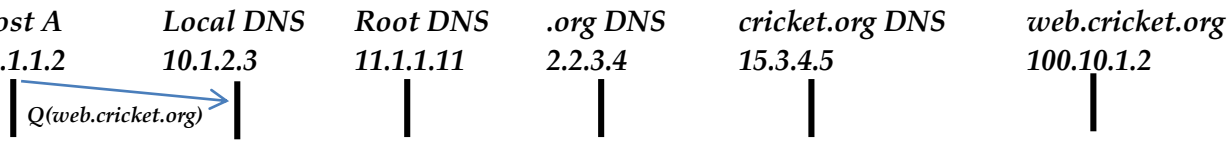
Q.2 a) Suppose your browser (client) downloads a webpage. The **base html (master index file)** object is **50 Kbytes** in length and additionally contains **5 embedded images**, each **10 Kbytes** in length. All links have capacity of **50 Mbps**. Assume as shown in the following diagram:

- ✓ The **base html** is stored in the **original server** and the **5 images** are all stored on the **CDN server**.
- ✓ **R1** (RTT between Client and original server) = **100 ms** and **R2** (RTT between Client and CDN server) = **50 ms.**



Calculate the **response time** to download the entire web page for (i) **Sequential** non-persistent HTTP**,** (ii) **Parallel** non-persistent HTTP, (iii) **Sequential** persistent HTTP, and (iv) **Parallel** persistent HTTP. **[5]**

b) The diagram below shows a **DNS query** from a **Host *A*** to its **local DNS server**. The IP addresses of all hosts are shown in the diagram. The label **"*Q(web.cricket.org)*"** specifies the query string.

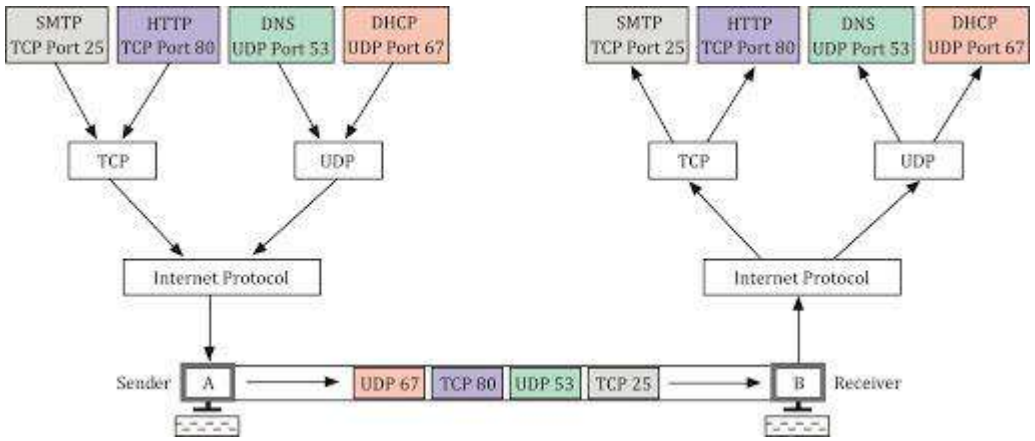


i. Assuming that **Local DNS server cache** is **empty** initially, **list** the **DNS server names** and corresponding **IP addresses** that will be stored in the **Local DNS server**. **[2]**

ii. List the **DNS record** (name, value, type, ttl) that **cricket.org** authoritative DNS will store for **web.cricket.org**. **[1]**

Please Turn Over →

Q.3 a) **Identify** and **Explain** how **multiplexing** and **de-multiplexing** are used in the following diagram: **[2]**



b) Mention **three** reasons why **UDP** is good for **real ti**me applications. **[2]**

←End of Paper – Thank You→