B.Sc.TE. 1-Yr 1st Semester
B.Sc.TE. 2-Yr 3rd Semester

02 March 2020 (Afternoon)

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)
ORGANISATION OF ISLAMIC COOPERATION (OIC)
Department of Computer Science and Engineering (CSE)

MID SEMESTER EXAMINATION — **WINTER SEMESTER, 2019-2020**

DURATION: 1 Hour and 30 Minutes — **FULL MARKS: 75**

CSE 4773: Internetworking Protocols

Programmable calculators are not allowed. Do not write anything on the question paper.

There are **4 (four)** questions. Answer any **3 (three)** of them.

Figures in the right margin indicate marks.

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1. a) What do you mean by Access Network? Briefly explain the Networking Infrastructure for Distributed Applications. 2+5

   b) Write short notes on any two of the following Access Networks with diagrams. 5×2
      i. Digital Subscriber Line
      ii. Cable Connection
      iii. Fiber to the Home (FTTH)

   c) What analogy is followed to best understand the difference between packet transmission and propagation delay? Explain the analogy briefly. 8

2. a) Briefly explain the different types of classful IPv4 addresses? Why is classless IP addressing is needed? 5+2

   b) An IP address 200.11.8.45 is given and its subnet mask is 255.255.255.224/27 is given. Determine the following. 15
      i. How many subnets can be formed from it?
      ii. What are the subnet IPs?
      iii. What are the broadcast address of each subnet?
      iv. What are the valid hosts for each subnet?

   c) What type of IPV4 addressing is used for Multicast Routing Protocols? 3

3. a) What type of IP addressing is used in Islamic University of Technology (IUT)? Describe how an end device from IUT communicates with the outside world. 1+3

   b) How does a newly arriving host get an IP address in an unknown network? Explain with diagram. 7

   c) Suppose, Host A wants to send a large file to Host B. The path from Host A to Host B has three links of rates $R1$ = 500 kbps, $R2$ = 2 Mbps and $R3$ = 1 Mbps 4+6
      i) Assuming no other traffic in the network, what is the throughput for the file transfer
      ii) Suppose the file is 4 million bytes. How long will it take to transfer the file from A to B?

   d) Though Network Address Translation (NAT) has enjoyed widespread deployment, yet some purists loudly object to it. Explain the reasons behind it. 4

4. a) Assume that the acknowledgment packet label from destination B is the last two digits of your student ID; hence complete the routing tables and briefly explain the setup phase. 9

   b) Demonstrate the delay for the network in Figure 1 with appropriate diagrams. 6

   c) What are the different types of network layer services? Briefly explain the services provided by the network layer at the destination computer with diagram. 10

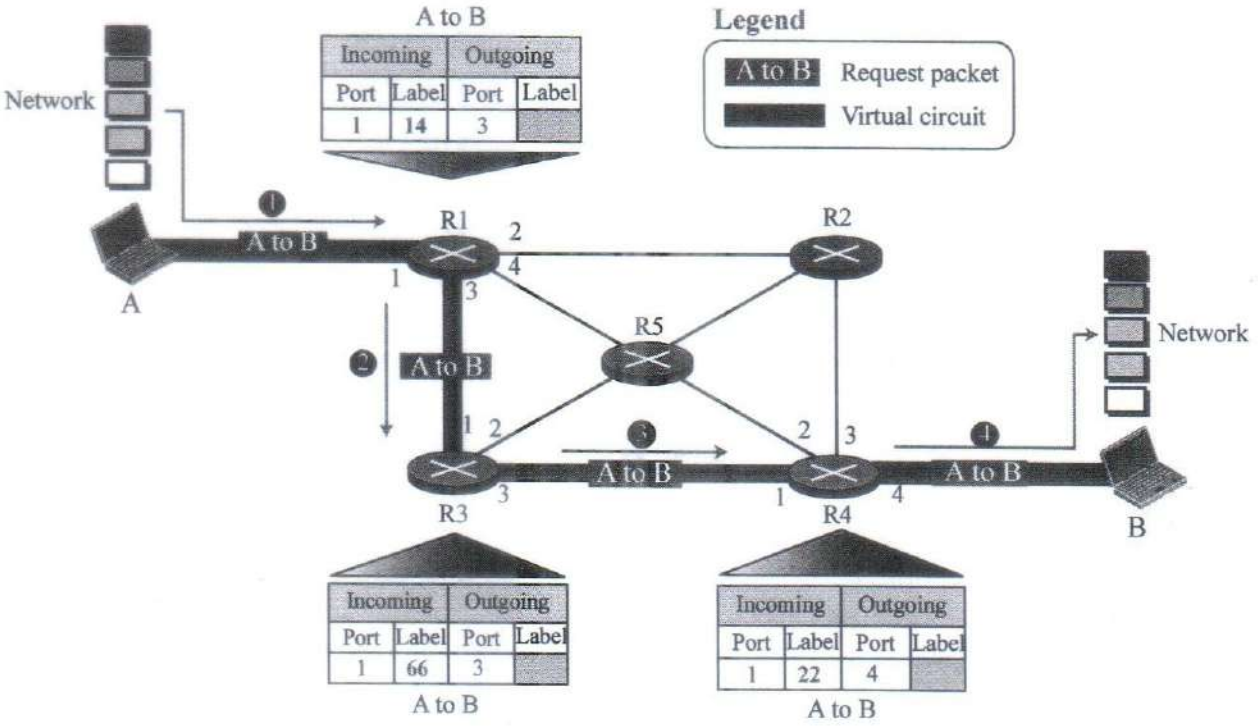

Figure1: Flow of Packet in Connection Oriented Packet Switching