

EE3009 Data Communications & Networking

Test 1

9 March 2018

Duration: 45 minutes

Total marks: 45

1. For each of the following access technology, state whether it is used by residential users or institutional users for accessing the Internet:
 - a. Ethernet ☒
 - b. Cable network ☒
 - c. Digital subscriber line ☒
2. Which protocol, TCP or UDP, is connectionless? [3 marks]
[1 mark]
3. Consider a TCP connection between Host A and Host B. Suppose that the TCP segments travelling from Host A to Host B have source port number 61 and destination port number 37. What are the source and destination port numbers for the segments travelling from Host B to Host A? [2 marks]
4. A client PC is to download a file from a server, what transport layer protocol should be used to establish a connection between them? Justify your answer. [2 marks]
5. A transmitter is sending a packet of length $1,000$ bytes to the receiver over a link of distance $2,500$ km, propagation speed 2.5×10^8 m/s and transmission rate 2 Mbps. How long does it take for the whole packet to reach the receiver? [3 marks]
6. The path from Host A to Host B has three links, of rate $R_1 = 500$ kbps, $R_2 = 100$ kbps, and $R_3 = 1$ Mbps. [2 marks]
 - a. Assume no other traffic in the network, what is the throughput between Host A and Host B? [2 marks]
 - b. Suppose Host A wants to send a file of 2 million bytes to Host B. Estimate roughly how long will it take to transfer the file to Host B? [3 marks]
7. A host in an organization has an IP address $150.32.64.34$ and a subnet mask $255.255.240.0$. [2 marks]
 - a. What is the address of this subnet? [2 marks]
 - b. What is the range of IP addresses that a host can have on this subnet? [2 marks]