

## ITS 323 – QUIZ 1 EXTRA (ITC)

First name: \_\_\_\_\_ Last name: \_\_\_\_\_

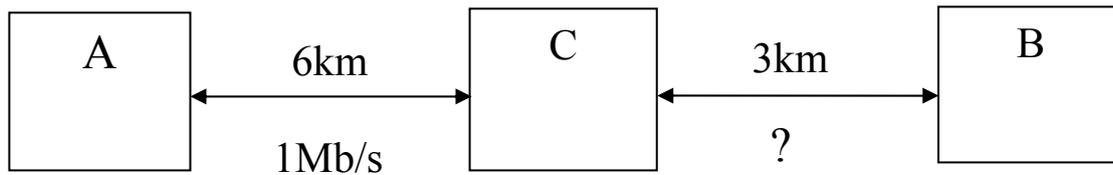
ID: \_\_\_\_\_

Total Marks: \_\_\_\_\_

out of 5

### Question 1 [3.5 marks]

Consider the network shown below in which two cable links are used to connect A to B (via C).



Queuing  
delay at C  
is 20 $\mu$ sec

If a message of size 100 bits has to be sent from A to B with a maximum delay of 250 $\mu$ sec, then what is the minimum data rate required over the second link?

You can assume the transmission velocity is  $3 \times 10^8$  m/s for each cable. Also assume there are no processing delays at any node, and no queuing delay at nodes A or B.

**Question 2** [1.5 marks]

Multiple choice questions – circle the most accurate answer (one answer only per question).

A web browser, such as Firefox or Internet Explorer:

- a) Only implements the Application layer of the TCP/IP stack
- b) Only implements the Application layer and Transport layer of the TCP/IP stack
- c) Normally implements all layers in the TCP/IP stack
- d) Normally implements all layers in the OSI 7-layer stack

The address 192.168.1.3 is an example of a:

- a) Transport layer address
- b) Port address
- c) Logical address
- d) Hardware address

If a protocol adds a 20 byte header to a message, and the original message size is 60 bytes, then:

- a) The efficiency of the protocol is 75%
- b) The efficiency of the protocol is 60%
- c) The efficiency of the protocol is 80%
- d) The throughput of the protocol would be 0.8Mb/s if the data rate was 1Mb/s
- e) The throughput of the protocol would be 0.2Mb/s if the data rate was 1Mb/s