

**SIMON FRASER UNIVERSITY
SCHOOL OF ENGINEERING SCIENCE**

**Spring 2009
ENSC 427: COMMUNICATION NETWORKS**

Quiz No. 1

Thursday, February 12, 2009

Duration: 50 minutes. Attempt all problems. Please provide brief and concise answers. Questions are equally weighted. Closed book and closed notes. Calculators, PDAs, laptops, and wireless phones are not permitted.

1.
 - What is the OSI reference models for communication networks?
 - List the layers in the OSI reference model.
 - Provide examples of a protocol used in each layer.
 - List names of data units in each layer.
 - Indicate layers present in the following network elements: server, client, and router.
2.
 - What is the role of the application layer?
 - Name several Internet applications using UDP and applications using TCP.
 - What is SMTP?
 - Name and briefly describe three mail access protocols.
 - Name mail protocols that you use to send and receive email messages.
3.
 - List elements of a digital communication system.
 - What is channel capacity and how is it calculated?
 - What is the bandwidth of a signal? Provide a simple example.
 - Define SNR and its units.
 - Describe sampling and quantization of analog signals.
4.
 - List different types of model editors used to create OPNET models.
 - What is the main function of a process model?
 - What are the elements of a process model?
 - Give an example of a process model from an OPNET tutorial of your choice.
 - List five typical statistics collected from an OPNET simulation run.