## CS G525 Advanced Computer Networks Final Exam

Sem II 2019 – 20

Dec 4, 2019 2:00 – 4:00 PM

Max Marks: 36 marks

Name:

Roll No:

1. How does multipath fading affect the transmitted signal? Explain using an impulse as the transmitted signal. (4 marks) I model the effect of multipath fading and background noise as functions acting of the transmitted signals. If I transmit only one impulse, give example of functions for multipath fading and background noise such that each of these have minimum impact on the transmitted signal. (4 marks)

2. What is a difference between a faster pulse and a slower pulse in the frequency domain? Draw a diagram to illustrate. (4 marks)

3. In any traditional system, which uses a hot spare for fault-tolerance, we keep states of the replica in sync by communicating the states. What's a problem with this approach? (4 marks) How does SDN solve the problem of providing a fault-tolerant controller? State the assumption, if any, the solution makes. (4 marks)

4. Distributed denial of service attack is hard to detect in the traditional network. What can SDN make it easier to detect? (2 marks) How will it detect and defend? Mention 3 mechanisms. (6 marks)

5. What is a "heavy hitter" flow? (2 marks) Give an example of why network operators be interested in detecting a heavy hitter flow? (2 marks)

The flow characteristics can be characterized on two dimensions (a) user-space/kernel-space and (b) on-path/off-path. State one advantage of each for user-space over kernel-space and off-path over on-path. (2 + 2 marks)