



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)
6. 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)