CE3005: Computer Networks

Part I: Tutorial – 1

(Fall 2016)

1. Compare the two layering models – Internet vs OSI.

2. Show with the help of a diagram, the various headers that are appended to data at the sending host. Explain what happens to these headers at the switching nodes in a Wide Area Network.

3. In network resilience, the link failure probability can be interpreted as the percentage of the time that the link goes down during a time window. In a carrier-grade network, it is often required that the network should have 6 9's (i.e, 99.9999%) reliability. Please calculate the duration of allowable downtime per year for this network? (hint: *using the definition of failure probability*)

4. Singapore (SG) is connected to San Francisco (SF), via an intermediate node at Hawaii (HW). Two independent links connect between Singapore and Hawaii, and a long-range link connects between Singapore and San Francisco. Assume that each link fails independently with probability of 0.05. Calculate the probability in which SG is disconnected from SF.