

Ph.D. Qualifying Exam: Computer Networks
Department of Computer Science and Engineering
National Sun Yat-sen University
Date: January 14 (Mon.), 2013

1. Please describe how IEEE 802.11 CSMA/CA works. Why can not CSMA/CD be used in wireless channels? (12%)
2. Please describe TCP flow control. (12%)
3. Please compare link-state routing algorithm and distance-vector routing algorithm. (10%)
4. What is TIME_WAIT (2MSL Wait) state of TCP? Why does TCP need it? (10%)
5. What is the *self-clocking* behavior of TCP? (8%)
6. Please describe the fast retransmission and fast recovery of TCP. (10%)
7. Describe the operation of IP fragmentation and reassembly. Additionally, where does the reassembly operation do? (10%)
8. Please explain (1) *connectionless* protocol; (2) *connection-oriented protocol*. Illustrate an example for each protocol. (6 points)
9. Please describe how IGMP (Internet Group Management Protocol) works. (8%)
10. Why does interactive data flow deteriorate the TCP performance? Please list two solutions to improve the performance and describe their key ideas. (10%)
11. Please give an example to show why a host may send an ARP request with the target IP to be the same as sender IP. (4%)