

1 Computer Networking (djg11)

- (a) An Ethernet packet containing TCP/IP session data typically holds pairs of src/dest addresses or identifiers for various protocol layers. Select three different pairs of addresses, where each pair belongs to a different layer in the protocol stack. Explain the function of each pair and their associated assignment and matching procedures. [6 marks]
- (b) Integrity checks include cyclic redundancy checks (CRCs) and checksums. How do these differ in complexity and performance? [2 marks]
- (c) A packet switch or router can maintain packet queues at its input, at its output, distributed through its switching fabric, or using a combination of these options. Out of these options, is one theoretically ideal? Your answer should consider router cost and FIFO and non-FIFO queueing. [6 marks]
- (d) All-optical packet switches have been designed without any packet queues. They operate by sending a packet to a random output port when there is contention for the desired port. How adaptable is TCP to such systems in terms of detecting and recovering from loss or to out-of-order reception? [6 marks]