

Comments The exam seemed to go quite well. From a marking perspective there appeared to be some very good students and some very weak students with just a few in the middle ground.

Q1. This question was answered by almost everybody which was expected.

a) This was supposed to be about MAC and IP addresses but some extended the idea to IPv4 vs IPv6 which was OK.

b) This was easy and everybody did well.

c) Most attempts were OK but people differed in their depth of thinking. Some confusion is caused by different schemes for handling DHCP in different operating systems. Windows will select a 169.*.* link-local address, most other systems will not set any address until told what to do manually. DNS relies on server access. If the server is on the LAN then it will continue to operate using cached knowledge for a time. If the DNS server is external or part of the router then it will cease to work. ARP if killed stops all IP networking! However, many applications can work happily without DNS if given actual IP addresses be they normal local IP ones or link-local.

d) This final part separated answers into groups. There were those who know IPv6 well, those who know a bit about multicast and those with no idea at all. In IPv6, multicast is very important! Most IPv4 address spaces have few machines in the broadcast area. In IPv6 there may be vast numbers of local machines, hence multicast limits those likely to respond to a small set based on the bottom 22 bits of the IPv6 address.

Q2.

I thought lots would steer clear of this but it proved to be very popular and there were some very good answers.

a) Most knew this was to do with bursts of error bits and the need for detecting when this happens and perhaps correcting as well.

b) Again most had no problem with this. But several answers showed no knowledge of what these two schemes are.

c) A mixture. Most provided good attempts though not all totally correct. A few answers showed no idea what a 'Hamming distance' is or how it works. A few reproduced a version of notes on parity which was not relevant.

d) Many failed to use their code from part (c), this was OK where nocode was given! The majority were good answers but a significant number showed little or no knowledge of how these methods are used even if the basics of how they work was reasonably correct.

e) Almost all good answers. A fairly small number of small errors. Almost all got the pattern and logic correct.

Q3.

Again lots chose to do this question.

a) Almost everybody knows TCP is a bad choice. But one or two answers claimed the opposite showing little or no basic networking knowledge!

b) Mostly reasonable answers to this. But several answers forgot to talk about the mobile phone systems in relation to performance of streaming downloads over TCP.

c) The majority of answers did not follow the pattern I originally envisaged. Instead, they validly explained a bit about why TCP has problems and then described various techniques from the set of protocols and ideas for adapting TCP given in the lectures. However, very few paid enough attention to the "fast moving" statement in the question which implied that frequent hand-overs would be needed. Handover which is currently badly supported in WiFi but this should change in the few years!

Q4.

Only 1 attempt at this. I expected quite a few to have a go at it. I guess this shows how difficult to understand or may be visualize students find wireless propagation.

Q5.

This was attempted by a number of students.

a) Around 50% of answers got the main parts here correct. It is a real shame so many failed to read and understand the question specification which I still think is/was very clear.

b) This needed answer planning and some thinking time before writing. Too many answers drifted into discussion of data-link layer issues rather than network layer. It was surprising how answers varied in adapting to traffic movement patterns which are very predictable and therefore exploitable in protocol design. Few answers even mentioned ad hoc networks. I was shocked how many students worried about energy usage by car/bus/lorry/coach mounted wireless systems which have vast energy available.