Level 3 Technical Level

IT: CYBER SECURITY

IT: NETWORKING

IT: USER SUPPORT

Unit 2 Communication technologies
H/507/6426
Report on the Examination

TVQ01009, TVQ01010, TVQ01011, TVQ01012, TVQ01014
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One of the most challenging questions on this particular paper seems to have been Q12; quite a number of students did not attempt the question at all. This question required students to relate protocol data units (PDU) to the transfer of data over a network and required no more than the recall of the bits or frames or packets appropriate to named layers of the OSI model.

Similarly, Q13, was well-answered by some students (some achieving full marks) but, again, was not attempted by others. This question required an explanation of how a checksum identifies packet transmission errors, a question which has not been asked before.

One question, Q10.1, required no more than alternative terms for, respectively, wired media and wireless media and was very well answered overall; most students achieved both marks. However, there was one particular group of students who achieved no marks at all, presumably due to not having covered this part of the specification.

There were some recurrent themes, familiar from previous papers, with, for example, Q7, Q8, and Q12 examining student understanding of various aspects of the OSI model; Q6 and Q15 exploring the advantages and disadvantages of different topology; and Q10 and Q17 requiring an understanding of the causes of, and how best to avoid, electro-magnetic interference.

Some content was new to this paper: Q13 (checksum) is one example.

Q16 required an explanation of the characteristics of a network interface card. Student responses for this question were, overall, poor; this shortfall in performance suggests, perhaps, that students may not have had the practical experience in assembly recommended in the specification that would have better aided their understanding, application, and recall.

The first five questions of this paper were, as is usual, single mark multiple-choice questions, and one in particular seemed to present some difficulty: most students found it challenging to identify the correct definition of bandwidth from the options provided at Q4.

Of this paper's two-mark questions, in addition to the issue with Q10.1 described above, the following issues were apparent:

- Q6 anticipated student responses would relate to opportunities for hacking or disruption specific to a **network** (for example, total loss of function or service), but some students opted instead for responses detailing additional costs alone (initial set up costs, the cost of employing a Network Manager or Administrator, the increased costs of managing and maintaining a network); cost was not the focus of this question.

- While most students did well with Q7.2 and Q7.3 and also knew IP (Q7.1) was the common abbreviation for Internet Protocol, very few students could also provide (at Q7.1) Transmission Control Protocol as the full name for TCP.

- Many students made good use of diagrams in Q9 (and also at Q15.2). The most basic requirement in Q9 was that student diagrams demonstrated their understanding that the laptop should not connect directly to the internet. Some students opted for a combined modem-router and this was allowed.

Q17 — the first of two determinedly challenging, longer-answer, Section B questions — required an understanding and explanation of the benefits of licensed bands v unlicensed bands.

- A few students achieved all 3 marks but, overall, 1 mark was far more typical.
- Some students settled for 'less interference' (due to geography or location) when using licensed bands but offered nothing more; others made reference to licensed bands ensuring interference was less likely from other domestic or office/commercial sources, but offered nothing more.
- Some students suggested licensed bands guaranteed no interference, which was not awarded a mark.

Q17.2 required discussion **and** examples of interference in the home or office due to (the proximity of) unlicensed bands, and a number of very good responses were seen.

Although Q18, the final question of this paper, was deliberately challenging some good responses were seen, including one which was awarded all 15 marks. It was pleasing to find that, despite the challenging nature of this question, there was some good discussion of synchronous and asynchronous transmissions, with specific and appropriate reference to continuous and intermittent transfer of packets; more confident students also made reference to discrete packets, and more generally, there was secure recall overall of the SYN / SYN-ACK / ACK summary definition and some good supporting explanation of its significance in initiating and acknowledging packet transfer to a particular port.

Mark Ranges and Award of Grades

Grade boundaries and cumulative percentage grades are available on the Results Statistics page of the AQA Website.

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UMS conversion calculator