AQA

Level 3 Technical Level

IT: CYBER SECURITY
IT: NETWORKING
IT: USER SUPPORT

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

General

The January 2019 examination series produced the highest entry for this component of any January series to date. Pleasingly, the outcomes were also improved, with some evidence that lessons from previous series had been taken on board.

Multiple choice (questions 1-5)

As usual, the first five questions on the paper were single-mark multiple choice questions. The first four were very well handled, with at least three-quarters of students choosing the correct answer. By contrast, question 5 (IEEE standards) proved challenging, with little more than a third of students gaining the mark.

2-mark, short-answer (questions 6-9)

There were three 2-mark questions in Section A — questions 6, 7, and 9 — each requiring short-answer responses, plus question 8, a 6-mark question, itself requiring three 2-mark, short-answer responses.

A significant proportion of students scored no marks in question 6. A similar number picked up one mark, most commonly for identifying the human voice as an example of an analogue signal. However, few students managed to score both marks.

Question 7 was by far the best answered of the 2-mark questions, with seven out of ten students achieving both marks. Almost all successful students achieved their marks by referring to megabits per second and megabytes per second, rather than any of the other creditable responses listed in the mark scheme.

In question 8, the majority of students were able to pick up two or three of the six marks available, but rarely did anyone score much more. The hub seemed to cause most difficulties, with incorrect answers often making inappropriate reference to a BT hub and coverage throughout the home.

In question 9, the majority of students were able to successfully state the role of the IP, but good definitions for the TCP were much rarer. However, around a third of students managed to score both marks.

3-mark, short-answer (questions 12 and 13)

There were three 3-mark questions in Section A, questions 12.1, 12.2, and 13. These questions demanded layer-specific understanding of the role of protocols in ensuring the secure and reliable exchange of data across a network, and the role of IMAP in particular.

Question 12.1 required students to name layer-appropriate protocols, and few were able to do so. A majority of students scored no more than one mark, with a significant proportion scoring nothing at all.

Question 12.2 (IMAP) was answered even less successfully, with the majority scoring no marks. Numerous creditable points are listed in the mark scheme, and the fact that few students were able to hit upon any of these suggested a widespread unfamiliarity with this topic.

Question 13 concerned the transfer of data across data-link and network layers. The distribution of marks was very similar to question 12.2, again showing a general lack of familiarity with the topic.

4-mark, short-answer (questions 10, 11, and 16)

There were three 4-mark questions in Section A — questions 10, 11, and 16 — all requiring short-answer responses.

Question 10 (wired networks v wireless networks) was well answered, with two out of five students achieving all 4 marks. Many students picked up marks by making appropriate reference to weather conditions in their answer.

Question 11 (data transfer speed v signal strength) proved somewhat more challenging. While the given statement was true to some extent, the most successful students understood that improvements in data transfer speed dependent on increased signal strength are limited.

In question 16 (mesh networks) there was a pretty even spread of marks across most of the mark range. Relatively few students scored full marks, although this was much as expected for the final question in the section. It was clear that students were not entirely clear about recent advances in mesh networking, but some answered well using concepts with which they were familiar.

6-mark, longer-answer (questions 14, and 15)

There were two 6-mark questions in Section A — questions 14 and 15 — both requiring longer, more considered responses.

In question 14 (EMI), there was a fairly even spread of marks across the lower half of the range, but few scored more than 4 out of 6. Students often focussed on EMI in one particular context, for example people working in an office, which somewhat limited the scope of what they could say. Nevertheless, they were often able to think of several causes and pick up 3 marks, but they then struggled to come up with appropriate solutions.

Question 15 proved much more accessible. A majority of students achieved at least 4 marks, with 1 in 4 students achieving all 6. Students typically focussed on loss of data, income, and reputation.

Section B (questions 17 and 18)

Section B is intended to challenge and provides opportunities for students to demonstrate their greater understanding of one or two themes.

Question 17.1 (cost v performance of various transmission media) was a simple 3-mark matching exercise that would not have looked out of place in section A but for what was to follow in the later parts. It was answered extremely well, with well over half the students achieving all 3 marks.

Question 17.2 (advantages and disadvantages of copper-based cable in a high-definition environment) was a 9-mark question that proved appropriately challenging but with generally good outcomes overall, perhaps due in part to a context with which many would have had some practical familiarity. Almost two thirds of students achieved at least 4 marks, and a quarter achieved at least 7.

Question 17.3 (attenuation and cable design) was a short, 3-mark question that proved far more challenging. The vast majority did not appear to have any idea what 'attenuation' meant and were therefore unable to access any of the marks.

Question 18 was a 15-mark question requiring recall of SIM card development to date and discussion related to the possible advantages and disadvantages of eSIM and virtual SIM developments. As the final question of this paper, it was intended, as in previous series, to provide a challenge by requiring students to produce a long-form response to a relatively open-ended question. Most students made a decent attempt at this and picked up quite a few marks accordingly, although few made it beyond level 3 (ie 9 marks).

Almost all students made appropriate reference to 1FF-4FF development, with most referencing reductions in size and some also making reference to improvements in application and capacity. Some more-able students discussed the advantages of eSIM and related it to OTA updating, while others recognised the disadvantages of the introduction of yet another new feature and the cost to the customer in replacing or updating their existing phone.