Examiners' commentary 2018–2019

CO2222 Data communications and enterprise networking – Zone A

General remarks

This assessment is set with the intention of determining whether candidates have achieved the principal objectives of the module, in particular, whether they have learned the key concepts and technologies that underpin data communications and if this knowledge can be applied to the solution of technical and business problems. The examination paper is divided into two parts, Parts A and B, and candidates are required to attempt four questions, two from each section.

The following commentary details the main elements of the examination paper on a question by question basis, highlighting important aspects and suggesting, where appropriate, what is expected in a 'good' answer and where problems may have arisen. All questions follow a similar format, starting with a simple true/false section followed by a number of subsections, each with a specific focus.

No comment is made in respect of the true/false sections as they simply involve knowledge of specific facts contained in the subject guide. The only advice that can be given by way of help with these is to read the subject guide thoroughly.

Comments on specific questions

Question 1

This question was concerned with a mix of topics grouped around data communication and transmission. It started with Shannon's law, which appears very frequently on examination papers.

The next part of the question asked for 'quantitative characteristics of a channel', i.e. those that can be measured and expressed as numerical values. The obvious answers are capacity, bandwidth and noise.

The following sub-questions, which asked 'how' and 'compare', required a descriptive answer. Most provided good descriptions of how circuit and message switching work but the comparison part was less well answered. Compare-type questions are always best answered in the form of a table.

The final part of the question involved a checksum problem. Data words and a checksum value are given for use in explaining how the method works rather than an actual calculation. This was a descriptive question that was generally well answered but a number of candidates approached it as though it was necessary to prove the given values were correct, which is not what the question asked.

Question 2

This question focused on network protocols and control. It began with a straightforward question asking for a description of **layered architectures** and their advantages.

The next part of the question involved a Spanning Tree Protocol problem. These appear frequently and are generally well answered. There is no substitute for practice with these problems; the solutions aren't difficult but do require a methodical approach and attention to detail.

Part (d) asked about Trivial File Transfer Protocol but not for a description. This was a common mistake. What was required was an explanation of the reasons for its use together with some examples. This was a good example of the importance of reading the question carefully and not wasting valuable time with details that are not required.

The final part of the question was concerned with flow control. It was straightforward and is covered well in the subject guide.

Question 3

This was a largely descriptive question (as indicated by 'explain how' and 'what' in parts (b), (c) and (d)). All aspects are well covered in the subject guide, and the only advice here is to read it more carefully.

The final section involved a Dijkstra routing problem. These appear frequently and generally cause few problems, other than candidates simply marking the shortest path, without labelling each of the nodes. The majority of marks are awarded for these labels, with generally only a single mark for marking the shortest route.

Question 4

This was the first question on Part B of the examination paper. The question was entirely descriptive with all parts beginning with either 'what' or 'how'. The early parts of the question were concerned with business issues (competitive advantage and SWOT), and the latter parts with technical matters (Ethernets and broadcast storms). All aspects are well covered in the subject guide, so again, you are reminded to read the subject guide carefully.

Question 5

This question was largely concerned with aspects of network routing and switching, ranging from the PSTN, CSMA/CA, SMDS through to network integration. The question was again entirely descriptive with all parts beginning with 'what'.

That said, the answers did require the application of knowledge gained from the course and subject guide rather than a simple reproduction of material. For example, part (d) asked for 'weaknesses' and part (e) asked for 'reasons'.

Question 6

The final question was concerned with issues of performance, both from a technology viewpoint (parts (b) and (c)) and in terms of design. The first two parts were generally descriptive and are well covered in the subject guide.

Parts (d) and (e) involved issues of performance in network design. Part (d) asked for ways in which it can be measured with answers such as throughput and delays (e.g. as measured by RTT) expected. Part (e) was looking for a discussion around such matters as requirements capture, trade-offs, iterations, etc.

Summary

This commentary has attempted to highlight the main features and some of the common problems that arose with the 2018–2019 examination paper, in the hope that it will help candidates to prepare for future examinations. Some general issues can be identified, which are summarised here:

- Read the question carefully to understand what the examiners are asking, e.g. the difference between 'describe', 'explain', 'compare', etc.
- Note the number of marks available for individual parts of a question and provide answers of appropriate length.
- Practise solutions to common practical problems (e.g. Checksum, Spanning Tree, etc.).
- Read the subject guide (several times, if necessary!).