Examiners' commentary 2017–2018

CO2222 Data communications and enterprise networking – Zone A

General remarks

The assessment is set with the intention of determining whether candidates have achieved the principal objectives of the module. In particular, whether they have acquired the key concepts and technologies that underpin data communications, and can apply this knowledge to solve technical and business problems. The examination paper is divided into two parts, Part A and Part B, and candidates are required to attempt four questions, two from each part.

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, ranging from network topology and design, through physical and datalink layer controls (MAC and TCP), to network routing addressing. The emphasis of the question was on 'what' and 'how' rather than simple bookwork-type descriptions, although there were some marks available for descriptive details. It is important for candidates to recognise what the examiner is asking and focus their answer accordingly.

The final part of the question involved a simple Classless (CIDR) network address. While it is possible to produce answers to the various elements working directly in dotted decimal notation, it is far more reliable to convert the given address into the equivalent 32-bit binary string and work from that. The resulting binary strings can then be converted back to decimal notation to produce the final answers.

Question 2

This question focussed on network protocols and control. It was largely descriptive, with all aspects being well covered in the subject guide.

Part (c) 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) was concerned with ARQ error correction and retransmission overhead. A number of solutions went into considerable detail about the subtraction of

buffer pointers, and so on, when all that was really needed was a recognition that with Go-back-N it is the frame in error plus all subsequent frames currently held in the buffer.

Question 3

This was a largely descriptive question, as indicated by 'How' at the start of each of the first three parts. The only advice here is to read the subject guide 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 largely concerned with network implementation options and their potential benefits to business users. This ranged from storage (NAS), architectures (VLAN and PCNs) through to wireless LANs. The main advantage to a business of each of these is speed and security.

Part (d) presented a few problems, as it is not included in the subject guide but is covered widely in the recommended reading. The three types of station supported by wireless LANs are:

- No Transition Mobility.
- Basic Service Set (BSS) Transition Mobility.
- Extended Service Set (ESS) Transition Mobility.

Question 5

This question was largely concerned with aspects of network routing and switching, ranging from the PSTN, bridges through to routers. The question was largely descriptive, but part (d) did ask for an explanation of problems associated with transparent bridges (i.e. indefinite looping) and how this may be solved.

A significant proportion of the marks were available for Part (b), and therefore good solutions required a fairly detailed description of the steps involved in call set-up and clear, including consideration of the SS7 protocol.

Question 6

The final question covered routing techniques (NAT), performance (compression), network design and reliability. This was largely a descriptive question and all aspects are covered well in the subject guide, but as with other questions, candidates' ability to demonstrate understanding of 'why' and 'what' was important in order to achieve full marks.

Summary

The above commentary has attempted to highlight the main features and some of the common problems that arose with the 2017-18 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 examiner is asking, for example the difference between 'describe', 'explain', 'compare', and so on, and the importance of such words as 'mode' and 'approach'.

- 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. Hamming codes, Spanning Tree, and so on.).
- Read the subject guide (several times if necessary).