Examination report – December 2014 series

2730-022 Advanced Telecommunication Systems

Section 1 – Areas of good performance
Syllabus reference: 1.16 / 1.26 - Explain IP multicasting and give examples of reserved multicasting addresses. Explain the limitations of IP version IV (IPv4) and how IP version 6 (IPv6) will solve these problems. These sections were answered reasonably well by most candidates, indicating a reasonable understanding in this area. Syllabus reference: 1.10 / 2.2 / 2.11 – Subnet masking, standards. All parts were answered reasonably well, although occasionally there was lack of detail in describing the use of the RFC in development standards. Syllabus reference: 3.8 – Determine the critical angle of incidence given the refractive indices of the materials involved. This part was answered well by most candidates. Syllabus reference: 3.12 / 3.29 – Describe the structure of optical fibres giving typical dimensions. Distinguish between the properties of the PIN and the APD photo-diodes. Good answers given here indicating a strong knowledge. Syllabus reference: 5.7 / 5.15 – Explain the drawbacks associated with distance vector algorithms and their solutions. Describe the contrasts between the link-state routing protocol OSPF and the distance vector routing protocol RIP. These sections were answered reasonably well. A lack of detail in the explanations for the meaning of routing loops and how they be overcome by using the count to infinity method sometimes cost marks. Syllabus reference: 5.25 / 5.27 – Declare that full-duplex communication is achievable when only one host is directly connected to a switch port. Describe the different methods of switching and compare their advantages and disadvantages. Both section were answered reasonably well. Syllabus reference: 6.5 – Describe an IN and the advantages offered by an IN. Most candidates answered this section well showing a reasonable understanding in this area. Syllabus reference: 7.18 / 7.19 / 7.20 State the technologies, which are designed to improve performance and reliability of application servers in IDCs and how this is achieved. Describe how server clustering can be deployed for performance enhancement and/or fail over protection in an IDC. Identify open source examples of clustering technology. These sections were answered very well, but a lack of detail with explanations cost marks. Syllabus reference: 8.3 / 8.11 / 8.16 – List and explain the function of the components that

comprise the Internet management model in the context of the Simple Network Management Protocol (SNMP). Discuss Caesar's Cipher, introducing the concept of keys and explain that it is a simple example of encryption.
These sections were answered reasonably well although often statements were given instead of explanations for the functions of the SNMP components; managed object, agent and MIB.

Section 2 – Areas for development

Syllabus reference: 3.18 / 3.19 – Explain what is meant by Inter Symbol Interference (ISI). Explain the function of the 'eye diagram'.
Very few candidates understood the concept of an eye diagram or ISI, gaining very few marks.

Syllabus reference: 3.22 – Describe how optical fibres may be joined and terminated.
Very vague answers given in this section, often in a simple statement form rather than descriptions of the two methods of joining an optical fibre.

Syllabus reference: 4.6 / 4.13 – Depict and label an ATM protocol architecture model. Describe the structure of the Synchronous Transport Module level 1 (STM-1) frame.
Untidy, unclear diagrams were often given for STM-1, costing marks with most candidates. The ATM concept was described poorly indicating a lack of knowledge in this area.

Syllabus reference: 5.24 – Explain how switches create separate collision domains in a topology that deploys contention as the method for media access.
Very few candidates explained accurately how switches can create collision domains.

Syllabus reference: 6.5 / 6.9 / 6.10 – Describe an IN and the advantages offered by an IN. Describe the components of the SS7 protocol stack and their functions. Describe the function of different types of signalling endpoints.
Very few candidates seriously attempted this section, those that did gave mostly incorrect answers, indicating a need for further study in this area.

Section 3 - Tips

- Read questions carefully re- descriptions, explanations etc.
- Produce neat legible diagrams if asked for.