

**BCS Higher Education Qualification**

**Certificate in IT**

**October 2022**

**EXAMINERS' REPORT**

**Computer and Network Technology**

**Questions Report:**

<b>A1</b>	<p>This question is based on <b>Processor Architecture</b>.</p> <p>This question was not a popular choice with only a few candidates choosing the topic.</p> <p>a) Some candidates found difficulty in distinguishing between the two chipsets. Some also wrongly associated the Southbridge chipsets with running applications. In general answers tended to blur any distinction between the chipsets.</p> <p>b) For this part no candidate correctly identified the central reason for no longer seeing a Northbridge separate chipset as the integration of more functions into fewer components. Many answers focused, incorrectly as the need to hide the Northbridge for security reasons or to avoid it being near other components that might overheat it. The observation of the Northbridge being a speed bottleneck which necessitated the bringing together of the components to make things faster was only mentioned by a few candidates.</p> <p>c) The reason for motherboards after 1999 not generally supporting the ISA bus is due to the widespread use of larger bus widths on motherboards after 1999. An answer that acknowledged ISA started from 8 bits and extended only up to 16 bits would have been appropriate. However, many answers tended to focus on either security aspects or mechanical issues and failed to gain any marks.</p>
<b>A2</b>	<p>This question is based on <b>Fundamentals</b>.</p> <p>This question was most popular amongst candidates</p> <p>a) This question on decimal to binary and binary to decimal conversion proved to be well answered by many candidates. For both conversions most candidates gave the correct answer. However very few candidates produced a full grid in the explanation of showing the working for the solution. Many provided a partial grid showing the division by two procedures for decimal to binary. Also, the binary to decimal tended to provide a partial showing of the full working, thus failing to gain full marks.</p> <p>b) This part required binary to octal and binary to hex conversion without using the decimal route. Some candidates ignored this requirement and correctly answered the question but used the decimal route thus losing marks.</p> <p>c) Many candidates found this part of the question difficult. The importance of a conversion starting with the least significant bit should have been identified as starting at quantities of 1's so that the subsequent higher bits would not produce values that are greater than the base. Many candidates did not go down this way of explanation. Answers tended to state that it was the convention and did not extend it to a reason.</p>
<b>A3</b>	<p>This is question is based on <b>Networks</b>.</p> <p>This question was popular amongst candidates</p> <p>a) Proved to be reasonably well answered by a minority of candidates. The correspondence between ISO OSI and TCP/IP layers was correctly identified and shown in a diagram. The question asked for a diagram to show the relationships. Doing this gained full marks. However,</p>

	<p>many candidates showed a series of modified diagrams and attempted to give a narrative that did not correspond to the diagram(s). Some answers gave confused illustrations and, in some cases, correctly described the correspondence, such answers gained minimal marks where it was possible to justify the diagram drawing. Many answers gave a purely narrative account and did not address the requirement of the question.</p> <p>b) This part on peer-to-peer networking proved difficult for many candidates. Very few answers showed an appreciation of encapsulation with each successive layer encapsulating from the layer above. Many answers were vague and gained minimal marks for noting that there was a process of combing that meant encapsulation but gave no further detail as to process.</p> <p>c) This question asked why ISO OSI might be based on TCP/IP rather than the other way about. Very few answers identified the core reason being the historical development of the models. TCP/IP came first and OSI built upon its working. The historical precedence was lost on most candidates with explanations that focused on the different layers that each model refers to without suggesting why this would justify the precedence.</p>
<b>A4</b>	<b>This question is based on Introduction to Operating Systems and System Software.</b>
	<p>a) Answers in this part of the question tended to show a reasonable appreciation of the kernel and its operations. The key features of it being at the heart of the system and the importance in the control of low-level tasks was correctly noted in answers. Some answers were unable to correctly place the role of the kernel and suggested incorrectly that a purpose of the kernel is to provide a GUI interface to allow a user to control the system.</p> <p>b) This question on Linux daemons and the role of daemons was poorly answered by many candidates. A few correctly mentioned daemon process names and functions such as Crond, Syslogd, Dhcpd and so on. These answers gained good marks. It proved quite difficult for many candidates to show how to distinguish a daemon process from a standard user process – a standard distinction would have been that daemons are essentially background processes that need special permissions to be accessed by specialist privileged users.</p> <p>c) Those candidates that did attempt this part of the question generally showed a appreciation of the rebooting process being essential to changes to daemon configuration files as the loading into memory process at start-up. Very few answers correctly identified the alternative to rebooting being the root or sudo authorized user being allowed to stop and restart the process</p> <p>d) The significance of rc.d as the store of master scripts used in system initialisation was correctly noted in some answers and subsequently gained good marks. Many candidates did not answer this part of the question.</p>
<b>B5</b>	<b>Syllabus area: 4.1</b>
	<p>a) This question was to describe the purpose of a communication protocols. The question was generally well answered with most able to describe the purpose as provision of rules. Many answers did not include a definition that included rate of transmission. Some answers were quite long with detailed technical descriptions of protocols. This level of detail was not required</p> <p>b) The function of DHCP was well answered by most. The main function is the assignment of an IP address. Some answers failed to specifically mention this and subsequently lost a mark</p> <p>c) This question proved quite difficult for most with the common answer being to use DNS. DNS is not an alternative. Those answers which included the manual assignment of an IP address gained full marks, as this can be considered a direct alternative to DHCP</p>
<b>B6</b>	<b>Syllabus area: 2.4</b>
	<p>a) Many candidates did not correctly read the question which was to explain with the help of a diagram a multi-core processor. A good number of answers referred to a multi-processor</p>

	<p>architecture and gave convincing answers which unfortunately did not correctly address the question. Many answers did not include a diagram so lost some marks.</p> <p>b) Many answers to this question tended to blend in with the description given from part a) rather than mentioning the ability to run multiple applications simultaneously (by virtue of having multi-cores). Answers that also included higher latency and cache speeds as enabling better performance attracted full marks.</p>
<b>B7</b>	<b>Syllabus area: 2 &amp; 3</b>
	<p>B7</p> <p>a) This was generally well answered. Most candidates were able to describe some aspects of Network Performance Monitoring. Those that answered the question well were able to explain about measuring latency, bandwidth and performing activities such as benchmarking</p> <p>b) The majority of candidates gave good answers that adequately covered the purpose of WAN's</p>
<b>B8</b>	<b>Syllabus area: 1.1</b>
	<p>a) This question was popular with many candidates. Answers to conversion into binary and hex parts of the question tended to show that there was more confidence in binary conversion rather than hex, many answers provided only one correct part thus failing to gain maximum points. The question required that the block 192.168 be converted as a whole. Many answers showed the question was divided into 192 having the hex value followed by its binary value then 168 following the same pattern.</p> <p>b) This question required conversion from two binary numbers into decimal and hex. The majority of candidates were able to do the decimal conversion but many had difficulty in performing the hex conversion, indicating less confidence in that conversion process</p>
<b>B9</b>	<b>Syllabus area: 4</b>
	<p>a) For SSL answers here were generally well done with a few candidates failing to note the essential point of SSL being secure. Many simply incorrectly referred to it as session socket layer.</p> <p>b) HTTPS this question was correctly answered in only a few cases. Most neglected to note that HTTPS is HTTP within an SSL system. Many answers simply stated HTTP and gained no marks.</p> <p>c) FTPS was correctly answered by only a few candidates. Once again as in b), answers focused on FTP with no mention of the extra role of SSL making the FTP extension FTPS. Few candidates gained marks from this question.</p>
<b>B10</b>	<b>Syllabus area: 2.5 &amp; 3.1</b>
	<p>a) Many answers showed a good appreciation of the advantages and disadvantages of a laser printer as compared to an inkjet printer. However, a significant number of answers incorrectly gave advantages and disadvantages of BOTH laser and inkjet printers. Not reading the question clearly resulted in many candidates writing lengthy and inappropriate answers. As a result, many answers failed to give full three advantages/disadvantages of a laser printer and concentrated on inkjet printers and gained few marks.</p> <p>b) This part of the question was generally not well answered. A good number of candidates could only give vague descriptions of the operating principles and in many cases gave answers that related to the advantages in operation and not the operating principles of the machines. Subsequently few marks were gained from this question</p>
<b>B11</b>	<b>Syllabus area: 4.4</b>

	<p>a) This question was on the description of three functions of antivirus software. The large majority of candidates were able to describe three functions. In many cases candidates wrote more extensively and described more than the three descriptions required by the question, for which extra marks were not available. In some cases, candidates merely named three functions but did not provide an adequate description (in some cases no description was attempted) and lost marks.</p> <p>b) This question required the description of three types of cyber threat. The question was answered completely by the large majority of candidates and maximum marks were gained. Some candidates repeated large parts of the answers given to part a) and failed to name a particular threat. The requirement was to describe cyber threats such as Malware, Man in the middle, SQL injection and others from the possible range of threats. Naming and describing such threats would have gained maximum marks</p>
<b>B12</b>	<b>Syllabus area: 3.1</b>
	<p>a) A number of candidates gave general characteristics of a biometric system without specifically describing a type and consequently lost marks. Many candidates gave very good descriptions of more than the required three, unfortunately gaining no further marks for the extra effort (and time taken).</p> <p>b) A description of three disadvantages of bio-metric security systems was the theme of this question. Some candidates chose to write on three advantages/disadvantages, which was not required. A few candidates gave simple brief descriptions, such as 'hard to fix', 'easily broken', and so on. For full marks a description was required that would expand the brief description with more detail.</p>

**Additional Examiner comments:**

Candidates would benefit from using the new e-book resource available from BCS on this module.