BCS THE CHARTERED INSTITUTE FOR IT

BCS HIGHER EDUCATION QUALIFICATIONS
BCS Level 6 Professional Graduate Diploma in IT

COMPUTER SERVICES MANAGEMENT

Answer **any** THREE questions out of FIVE. All questions carry equal marks.
Time: THREE hours

Answer any Section A questions you attempt in Answer Book A
Answer any Section B questions you attempt in Answer Book B

The marks given in brackets are **indicative** of the weight given to each part of the question.

Calculators are **NOT** allowed in this examination.

EXAMINERS' REPORT - September 2017

General comments on candidates' performance

Answers for this session were generally of a high standard.

The evidence shows that the candidates who performed best had considered the information presented and what was required for each question. They gave carefully argued answers that addressed all the core parts of the question and demonstrated an appropriate professional approach to their responses.

However, some candidates repeated the information given in the question or provided a commentary about the question's contents. Weaker candidates provided large introductions and conclusions, often writing two or three pages that gained no marks. Candidates provided brief answer points without further expansion or examples that illustrated those points.

Although candidates were required to answer three of the five questions, some answered additional questions. As credit will only be given for the three best answers, future candidates are advised to attempt only three questions and to concentrate their thoughts accordingly.

The answer pointers below are for guidance only. Valid alternative answers that were relevant to the question would also attract full marks.

SECTION A

A1. You have recently joined an advertising agency as a manager in charge of IT Operations. This medium sized organisation has recently had problems with data security and the theft of computer equipment. You have been tasked with reviewing the system's security facility.

a) Describe THREE aspects of physical security that you consider to be important for this organisation.

(9 marks)

b) Describe THREE common computer system security threats

(9 marks)

c) Write a memo to the Managing Director explaining how data can be protected from the common security threats described above.

(7 marks)

Answer pointers:

a). Physical security controls include, but not limited to:

- Biometric devices
- Door locks
- Key cards
- Staff / visitor identification
- Security guards
- Access logs

(3 marks for each aspect of physical security control described, maximum 9 marks)

b). Common security threats include, but not limited to:

- **Cracking the password** – passwords can be guessed, or software can be used to test out character combinations
- **Network sniffing** – monitoring software can be used to detect passwords in network traffic that is not encrypted
- **Denial of service** – saturating the website with external communication requests which shuts down the site and business is lost
- **Trojan horse** – a malicious program hidden in an innocent program that appears helpful
- **Virus** – a piece of software that can replicate itself and infect a computer system, without the permission or knowledge of the user
- **Worm** – a self-replicating malicious software program. Unlike a virus it does not need to attach itself to an existing program or require user intervention to spread; makes use of the network to send copies of itself to other network computers
- **Spoofing** – an attack in which a person or program masquerades as another to redirect traffic to a spoof website or URL.

(3 marks for each common security threat described, maximum 9 marks)

c). Answer should be in memo format

(3 marks for memo format and style)
(4 marks for security threat protection explanations)

Examiners' comments:

This was the most popular question, answered by 96% of candidates, the majority of whom achieved a pass. The highest marks were given to candidates who demonstrated a good working knowledge and understanding of physical security controls, common security threats and the methods used to protect the system from these threats. The evidence shows that many candidates lost marks by discussing the implications of poor physical security, rather than concentrating on the physical controls that could be employed.

A2. You are a Computer Services Manager responsible for all computer and network operations for a large retail organisation with over three hundred stores. Due to expansion, the organisation is planning to recruit several new graduate staff into the computing department, and you have been tasked with preparing an induction course for these new employees.

Prepare notes on the following topics to support this course:

a) Role of a Computer Services Manager
b) Concept of service
c) Methods of obtaining customer / user feedback
d) Role of the help desk
e) Service level agreement (SLA)

(5 x 5 marks)

Answer pointers:

a) Role of Computer Services Manager can be summarised as:

- Operation of all systems which use or update operational data (central computing systems, networked systems, telephone switchboards, systems operated by third parties, systems on end-user computing facilities, scheduling of work, help desk for users, provision of testing services).
- Maintenance for all systems, software and services (operating systems software, application and package software and releases, error correction, essential business changes, acceptance of systems into production services).
- Supplier and custodian of all IT assets for the business (hardware, building infrastructure, support arrangements, software, licences, data security, disaster planning).
- Administration (staff management, reporting, budgets, legal, training, project management).
- Contribution to an organisation's IT strategy.

(5 marks)

b) Concept of service

The ITIL (Information Technology Infrastructure Library) definition of service level management is: "*Service Level Management is the process of managing the quality of delivered IT service according to a written agreement or contract agreed between the users and the IT Services Section. This contract defines the responsibilities placed on these parties and in particular binds the IT Services Section to offer an agreed quality and quantity of service so long as the users constrain the demands they place upon the service within agreed limits."*

However, the formal ITIL definition of service level management omits several factors that are important to our perceptions of good service. For example, unlike goods, which have a physical presence, services are intangible. Services are difficult to define or measure, with the perception of quality being dependent on a personal interaction between the receiver and provider of the services. This implies that the quality of the staff providing the service is very important, as they will represent that service. The cost of the service also affects our perception of its quality; if the price is higher, we expect a better service. Finally, a service is valued only upon completion, so there must be a high degree of trust between the receiver and provider of the service.

(5 marks)

c) Methods of obtaining direct feedback from customers / users

- Suggestion box/Comments book

- Questionnaires, could be conducted by post, face to face, phone, email or Internet
- Feedback / evaluation sheets
- Focus group
- Interviews, phone or face to face, could be structured or unstructured
- Complaints procedure

Some methods require a stronger involvement and commitment from your customers than others, if the feedback option is too time consuming it is likely that customers / users will not bother.

(5 marks)

d) Role of the help desk

The following non-exhaustive points could be included in the answer:

- Staff allocated to log all help calls, direct them to the appropriate resource and update store managers with progress.
- Help desk staff able to understand the urgency of the call and monitor progress with Computer Services.
- Help desk staff may be able to provide some help themselves with very simple and common calls (logging on, renewing passwords, planned downtime, etc.).
- Help desk statistics can provide an absolute record of all service communications.
- Statistics can also indicate trouble spots in relation to hardware and software.
- Can be used to suggest/direct user and IT staff training.
- Gives early warning when common errors are reported from more than one area.
- Can ask the users to grade their satisfaction with the call.

(One mark for each key point identified and described, maximum 5 marks)

e) Service level agreement (SLA) is a contract between the service provider and the customer or end-user; it outlines the parameters of the service that will be provided, such as:
    - Type of service to be provided
    - Service required performance level, reliability and responsiveness
    - The steps involved in reporting service issues
    - Response and issue resolution time frame
    - Levels including response times, availability and support parameters
    - Performance level monitoring and service level reporting
    - Consequence for service provider in failing to meet their commitments

(5 marks)

(5 x 5 = 25 marks)

Examiners' comments:

The majority of candidates who attempted this question gained a satisfactory pass mark. The evidence shows that few candidates had full knowledge of all five topics, but most generally had good knowledge of three of the topics. The role of the computer services manager, methods of obtaining feedback from customers and the role of the help desk were generally understood.

There was a lack of detailed explanation about the concept of service, except by those candidates who referred to the ITIL definition and expanded their answer to include examples of service quality. In the case of service level agreement (SLA), most candidates described the SLA contract but gave little detail about the parameters of the service that would be provided.

A3. Your CEO has heard the term "**technology life cycle**" and has asked you for further information. Write a memorandum to:

a) Describe the concept of the technology life cycle. Include in your description some examples of IT technology for each of the life cycle stages described.

(9 marks)

b) Discuss the relevance of the technology life cycle when considering the purchase of hardware and software.

(8 marks)

c) Explain, using examples of organisational types, why different types of organisation might favour buying hardware and software at different stages of the technology life cycle.

(8 marks)

Answer pointers:

This question sought to assess the candidate's understanding of the technology lifecycle (TLC) and its relevance to computer services.

a) Concept of the technological lifecycle

The concept of the TLC is that every technology has a finite life, similar to a biological life, in that there are clearly defined stages:

- Introduction
- Growth stage
- Maturity stage
- Decline
- Demise

Knowing the stage of the TLC is important, as buying technology at a stage that is inappropriate for an organisation can have a large impact upon an organisation. Candidates were required to describe each stage and provide an example of a technology at each stage. Possible examples were:

- Introduction (smart TVs)
- Growth stage (mobile broadband)
- Maturity stage (USB memory sticks)
- Decline (docking stations)
- Demise (daisy wheel printers)

(One mark for a general description and for stages correctly described, maximum five marks. A further one mark for each example, maximum four marks. Total 9 marks.)

b) Relevance to computer services

- **Reliability:** Hardware and software may be less reliable than items in the growth or maturity stages).

- **Longevity:** An item purchased in its introduction stage may have a short life, if it fails to take off. Alternatively, it may have a long life if the technology is adopted. A technology in the growth stage may be a safe option, as it is unlikely to be withdrawn and will have a reasonable life.

- **Cost:** Items in the maturity stage are likely to less expensive than those in the earlier stages, as alternative manufacturers may compete for a declining market.

- **Current and future compatibility:** Items in the earlier stages may not initially be fully compatible but compatibility will improve if the item gains general acceptance. Items in the later stages are initially more likely to be compatible but companies may withdraw their support if alternative items become available.

(2 marks for each area of relevance, maximum of 8 marks. Some examiner discretion.)

c) Relevance to different types of organisation

This part of the question sought to assess understanding.

The candidate was expected to use two or three types of organisation as examples. For instance:

Banks: Banks might not wish to entrust their core systems to technology in the introduction stage, as longevity may be secondary to their need to provide a reliable service. Therefore, banks typically would buy technology in the growth or maturity stage.

Telecommunications industry: Where technology is integral to an organisation, it is likely that items in the introduction or growth stages would be favoured. This would enable companies to demonstrate a difference between themselves and their competitors.

(Up to 4 marks for each type of industry discussed, maximum 8 marks)

Examiners' comments:

This question concerned the technology life cycle (TLC). The majority of candidates gained high marks for Part a), where they described all five stages of the TLC. The evidence shows that many candidates included a graphic representation to indicate the order of the stages and the usage of the technology throughout its life cycle.

Candidates generally achieved some marks for Part b). Answers were required to give an indication of the relevance of the technology life cycle when purchasing hardware and software. To gain full marks candidates needed to structure their answer to discuss the reliability, cost, compatibility and longevity for the technology at the various stages; for example, cost is less expensive in the maturity stage compared to earlier stages.

Part c) was answered well by those candidates who chose specific types of organisation. Good examples included banking and finance, and the high technology telecommunications industries.

SECTION B

B4. You are the Head of Service Delivery for a company which operates in the finance sector, providing bureau services to smaller organisations. You receive reports that external customers are experiencing a drop in service levels, with transactions either failing or taking much longer to complete than usual. You suspect a complex combination of server and communication issues may be to blame.

a) Describe FOUR actions which you would ask your staff to undertake to determine the nature of the problem.

(16 marks)

b) Write a report for the Board of your company explaining the importance of IT capacity planning in a server/network dependent organisation.

(9 marks)

Answer pointers:

a) The four actions could include – but would not be limited to – the following:

- Set up log for managing problem reports and anecdotal data which may help your investigation.
- Checks on network loading/capacity over time, visualised against server traffic.
- Seek to isolate types of activity so that impacts on particular service elements can be assessed.
- Check server loading including free memory, disk activity, memory in use by each application in order to narrow down the area of concern.
- Run tests using live/quasi-live system out of hours in order to try and recreate reported issues.
- Check for external impacts on local/regional telecoms activity.
- Check local logs for non-fatal hardware errors which may indicate performance loss.

(Up to 4 marks for each of 4 actions)

b) The ability to develop cogent arguments which can influence understanding, organisation and the investment profile is central to many aspects of IS/IT management.

The report format should be clear and carry the usual business style for this type of document.

Candidates should remember that the Board of the organisation is unlikely to have a high level of technical skill in this area, so the arguments presented should be clear and easily understood without an extensive technical vocabulary.

(Up to 4 marks for style and format)
(Up to 5 marks for the arguments regarding capacity planning)

Examiners' Comments:

This question was attempted by about a third of candidates and a wide range of responses was provided. While a number of good and competent answers were received, the evidence shows that many candidates fell below the standard expected of an examination at this level. Many answers lacked enough detail to provide a pass mark.

A number of candidates lost marks in Part (a) because they failed to provide the required FOUR actions and were thus seeking a pass grade from a smaller pool of possible marks.

Providing an answer in report format, as required in Part (b), is a standard requirement in a professional environment. Those candidates who did not provide this format lost marks as a result.

B5. Your organisation has a significant number of servers which are housed in a purpose built machine room in the basement of the building. It is essentially operated as a "lights-out" environment and is only visited once or twice a day by a duty system administrator who carries out routine checks.

One of the system administrators has expressed concern over this lone-working, suggesting that they might be at risk from being in the room alone and without supervision.

a) Describe THREE risks to which you believe the system administrator might be exposed to in this environment.

(12 marks)

b) For EACH of these risks, describe how the risk could be managed effectively without significant additional expense to the organisation.

(13 marks)

Answer pointers:

a) The usual range of "lone-working" risks apply, as well as several specifically IT related risks. They may include, but are not limited to:

- Electrocution by mains power.
- Illness not associated with the role.
- Tripping/falling.
- Falling equipment or racking.
- Release of inert or toxic gas from fire protection system.
- Attack by intruders.

(Up to 4 for each of 3 risks)

b) The risk management should be for EACH of the elements discussed in (a). The solutions should be appropriate, economical and not excessive.

(Up to 4 for each of 3 solutions)
(A single extra mark may be awarded for an exceptional solution)

Examiners' Comments:

This question was attempted by just over half the candidates. While some good answers were received, there were a number of very poor answers. There is evidence that many candidates appeared unfamiliar with the material covered by the examination and provided weak answers.

THREE risk factors were asked for in Part (a) of the question. However, a number of candidates provided either too few or too many factors, thereby either limiting the number of marks which could be awarded or expending effort on material which would not be considered.

Similarly, Part (b) requested that EACH of these elements be considered. In a number of cases, the answers received did not clearly address this and marks were lost accordingly.