**BCS THE CHARTERED INSTITUTE FOR IT**

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

**COMPUTER SERVICES MANAGEMENT**
**Tuesday 28th March 2017**

**EXAMINERS' REPORT**

## General comments on candidates' performance

*The answers for this session were of a much higher standard than in past examinations, although few candidates gained high marks for all questions answered. Future candidates are advised to:*

- ***Demonstrate in-depth understanding.*** *The evidence suggests that many candidates have the required knowledge but, by providing short abrupt answers, failed to provide the in-depth understanding to gain high marks. Often, candidates identified valid answer points but failed to provide further expansion or examples.*

- ***Avoid repetition.*** *Some candidates attempted to answer questions by repeating points previously made or by repeating points made in the question. Future candidates are advised that no marks will be awarded for repetition.*

- ***Answer all parts of the questions attempted.*** *Some candidates omitted parts of a question; for example, they answered parts a) and b) but omitted part c) altogether.*

- ***Only answer the required three questions.*** *Candidates were required to answer three of the five questions; but the evidence shows that some candidates ignored this requirement and provided additional answers. 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 are the manager responsible for the security of information systems in a large hospital. A member of your staff informs you that a significant number of the clinical team have received emails, texts and social media messages which claim to be from your department – which they are not. These communications ask the recipient to follow a link to a website to "refresh your password and security questions".

a) Detail the first THREE actions you would take in this situation.

**(12 marks)**

b) Write an article for the hospital newsletter/blog describing the risks of such an attack and giving FIVE key pieces of security advice to staff.

**(13 marks)**

**A1 Answer pointers:**

a) A clinical environment, by its very nature, holds significant sensitive personal information – as well as medical data which, if falsified, could lead to severe injury or potentially the death of patients.

Initial actions in the first instance could include, but are not limited to, the following:

- Check anti-virus and malware signatures on all systems.
- Block access to external sites identified in the message links.
- Alert staff to the risk as a matter of urgency.
- Seek to analyse the attack profile to see if messages can be intercepted prior to delivery.

*(Up to 4 marks for each of 3 actions, depending on the level of detail provided)*

b) The article should give a clear statement of the risk profile in the context of the attack. It should include details of how staff can identify fake messages, as well as indicating how "real" communications will be made with staff.

*(Up to 3 marks for style and format and up to 2 marks for each of 5 pieces of security advice)*

**Examiners' comments:**

*This was a popular question, attempted by nearly 90% of the candidates who sat the exam. The pass rate was over 85% and a number of extremely good answers were received. The evidence suggests that those whole failed to achieve a pass mark gave very limited answers which contained insufficient detail to provide the necessary depth of answer.*

*Marks were lost by a number of candidates who did not provide the number of elements required by the question: three actions in part a) and five key pieces of advice in part b).*

*Marks were also lost by those who did not provide their answers in the requested format, or who repeated elements which were only marginally different, rather than distinct.*

**A2.** You work for the network team of a large commercial organisation. Following a change of management, you are tasked with ensuring that a significant construction programme that will take place in your building does not impact on the routine operation of your IS/IT/Network infrastructure.

a) Discuss THREE key actions which you would carry out in the first week of your new role.

**(12 marks)**

b) Describe in detail how you would ensure that the network team is kept aware of any construction activities which would impact on the ability to keep the service operational.

**(13 marks)**

**A2 Answer pointers**

a) The key here is in finding mechanisms which will ensure that the normal activity of the organisation will continue uninterrupted during the construction. Key actions could include, but are not limited to, the following:

- Setting up regular meetings/dialogue between construction and network teams.
- Reviewing construction plans and time-lines for each warning about potential disruption.
- Building contingency plans to recover service quickly in the event of a failure.
- Testing plans to ensure they are fit for purpose.
- Reviewing plans for upgrades and other development to ensure no additional risk is added.

*(Up to 4 marks for each of 3 key actions)*

b) The challenge is a real one and will be a regular feature of the career of many IS/IT managers. Good communication between specialist groups sounds straightforward but needs serious work to ensure it is established and maintained successfully.

A mix of social and technical mechanisms/activities is often an effective solution, but this will be influenced by the culture of the organisations and people involved. Many variations are acceptable, as long as they are justified by the candidate.

*(13 marks)*

**Examiners' comments:**

*This question was attempted by nearly half of the candidates who sat the exam. The pass rate was over 80% and included a number of good answers. The evidence suggests that those who failed to achieve a pass mark often gave very limited answers which contained insufficient detail to provide the necessary depth of answer.*

*Candidates lost marks in many cases because they did not provide answers which adequately reflected the exacting nature of the project, or the very real risks to the continuity of the IS/IT function in this situation.*

*Candidates also lost marks if they did not provide sets of actions which might reasonably protect the IS/IT function or provide adequate communication paths between the key stakeholders.*

**A3.** As the new Director of Information Services for a university in the UK, you wish to ensure that the recruitment of staff to your department is effectively managed.

a) Describe THREE aspects of the staff selection process which you consider especially important.

**(12 marks)**

b) Create a detailed work flow which would guide a member of the human resources team through the appointment of an IT specialist. State any assumptions which you make.

**(13 marks)**

**A3 Answer pointers:**

a) These could include, but are not limited to, the following:

- Ensuring that background checks are carried out on potential staff members.
- Having a selection process which allows transparency in the preparation of a short-list.
- The interview process should not disadvantage particular groups who may apply.
- The process should ensure that the successful candidate will be a good fit with the role.
- Those with unconventional experience or qualifications should have an opportunity to demonstrate their skills.

*(Up to 4 marks for each of 3 aspects)*

b) The structure of this work-flow will vary depending on the level of experience and understanding of the candidate. It should, however, show that the candidate is aware of the need for open and transparent selection of staff into this type of post – as well as ensuring that the person selected has an appropriate level and range of skills.

The work-flow can be presented in a number of formats, as long as the intention is clear.

*(13 marks)*

**Examiners' comments:**

*This was a popular question and was attempted by exactly 50% of the candidates who sat the exam. The pass rate was over 75% and a number of good answers were received. The evidence suggests that those who failed to achieve a pass mark generally gave limited answers which contained insufficient detail to provide the necessary depth of answer.*

*A number of candidates lost marks by not providing the correct number of elements – three - in part a) and, in some cases, by not adequately explaining the importance of each with respect to the role.*

*The workflow required by part b) could be presented in any form and many candidates chose to use graphical elements in their response. This was effective in many cases but not essential. A well structured, text-based answer was equally acceptable.*

## SECTION B

**B4.** You work as a Computer Services Manager for an established company which is losing sales to competitors. The Board understands this is because the ordering system, developed many years previously, cannot be adapted to meet current demands.

You have been instructed to select a software development company to design and implement a bespoke ordering system, specifically designed to meet the company's requirements. You have tendered the work to two different software developers and have found that their cost and time estimates are similar but are high when compared with an equivalent applications package.

a) Explain how the software development companies and the applications package suppliers could be evaluated.

**(10 marks)**

b) Compare the advantages and disadvantages of using an applications package versus a bespoke system.

**(5 marks)**

c) Describe a cost benefit analysis method with which you are familiar and which could be used to justify the new system. Include the advantages and disadvantages of the method selected.

**(10 marks)**

### B4 Answer Pointers

### a) Supplier evaluation

The Computer Services Manager will need to evaluate the different offerings from the suppliers by asking a number of questions:

- How long has the supplier been in business?
- How large is the supplier?
- Is the supplier financially stable and secure?
- How much experience does the supplier have?
- How good is the supplier's guarantee?
- Will the supplier put promises in the contract?
- Will the supplier provide customer references?
- Does the supplier have a good reputation?
- Does the supplier provide support?
- Does the supplier install the product?
- Does the supplier have qualified personnel?
- Does the supplier provide training?
- How responsive and timely is the supplier's support?

*(One/two marks per expanded point or question, maximum 10 marks)*

### b) Package versus bespoke

Some of the advantages that could be mentioned for a package purchase include:

- Package is typically a tried and tested system, with good user and technical documentation.
- Costs are known in terms of package price (but possibly not in terms of tailoring costs).
- May have extra features that were not considered at the outset yet may prove to be of benefit to the organisation.
- Usually supported and maintained by the originator company.

Disadvantages include:

- May need substantial tailoring to suit the needs of the organisation or, indeed, may never be able to fulfil all requirements.
- May not be any suitable packages that run on the existing hardware platform.
- Initial tailoring and subsequent maintenance need to be undertaken by originator company, which means more expense.
- Expensive upgrades to the package may be needed.

Some of the advantages for an in-house development include:

- Under in-house control.
- Caters for exact user requirements – part of the requirements specification activities is to determine these.
- May be quite efficient if developed with the particular hardware set-up of the company in mind.

Disadvantages include:

- Price uncertainty.
- The risk of undertaking a relatively large and important system development.
- Problems of retaining the staff who develop the system,

*(5 marks – according to completeness/quality of answer. A straightforward question and so candidates will need to impress to gain the high marks)*

**c) Cost benefit analysis**

Candidates are asked to select any method with which they are familiar, such as NPV (net present value) and ARR (accounting rate of return).

**Description of NPV**

The NPV method of investment appraisal compares the accumulated cash inflows and outflows for a project, with future flows that are adjusted by the organisation's discounted rate. This is done by:

- Calculating the total investment for the project.
- Calculating the net cash inflows (or savings in expenditure) that will be realised in each period of the project's life.
- Converting all future cash flows to their present value, using the organisation's discount rate.

The NPV is then the present value of the accumulated cash inflows minus the present value of the investment.

**Advantages:**

- No computational issues.
- Correctly ranks projects (except capital ratios).
- Gives an absolute value of projects.

**Disadvantages:**

- A difficult concept.
- Requires assumptions to be made to measure shareholder wealth.
- Does not allow for the risk of the project.

- Not directly related to the profit and loss account.

**Description of ARR**

- Calculate the total investment for the project.
- Calculate the net cash inflows (or savings in expenditure) that will be realised in each period of the project's life.
- Calculate the accounting profit over the life of the project.
- Divide the total profit by the number of periods and express this as a percentage of the average investment.
- The average investment may be calculated on an annual basis or approximated as (initial investment + final investment) ÷ 2

**Advantages**

- Simple and uncomplicated.
- Comprehensible – gives percentage return.
- Relates to financial accounts.

**Disadvantages**

- Ignores the time value of money.
- Cannot relate target return to economic objectives.
- Suffers from problems of accounting measurement.
- Ignores cash flow.
- Prefers relative return to absolute return.

*(10 marks: 6 marks for a description and 4 marks for the advantages and disadvantages. Some examiner discretion)*

**Examiners' comments:**

*A popular question answered by the majority of candidates, although only 47% achieved a pass mark.*

*In part a) the evidence suggests that candidates misunderstood the question and gained low marks by comparing bespoke software and application software development techniques.*

*Part b) was well answered by the majority of candidates who gained full marks by describing the advantages and disadvantages of using an application package in comparison with bespoke software.*

*Finally, in part c), although some candidates indicated a good understanding of cost benefit analysis theory, the evidence suggests that some were not adequately prepared and were unfamiliar with a suitable method that could be used for cost benefit analysis.*

**B5.** In the context of computer services, write notes on the following:

a) Technical Support Manager responsibility
b) Network Engineer responsibility
c) Personal qualities required by computer services staff
d) ISO 9001 Management Principles
e) FAST (The Federation Against Software Theft)

**(5 x 5 marks)**

**B5 Answer Pointers**

**a) Technical Support Manager responsibility**

- **Systems software.** Responsible for all the application-independent software required to operate the computer facilities and to provide the infrastructure for the development and secure operation of all IS facilities within an organisation. Version maintenance across all system software.
- **Application software.** Often responsible for the live application software, configuration control and all changes to the live service.
- **Security.** Responsible for all firewalls, data security, back-up/recovery at the site level, as opposed to the system level. Usually responsible for DR planning and routine testing.
- **Hardware.** The architectural design of computer systems and networks, to include capacity and sizing, redundancy, security, installation and configuring.
- **Network.** Sometimes, but not always, responsible for all parts of the computer network, including telephone exchange and equipment, communications links, file servers, workstations, printers, scanners and other peripherals.
- **Managerial.** Managing the technical support and systems programming staff assigned.
- **Diagnostic.** Responsible for diagnosing and solving application-independent software faults (operating systems, DBMS software, etc).
- **Work relationships.** Establishing good working relationships with outside suppliers and internal IT co-workers.
- **Testing.** Provision of testing environments for developer.

*(One mark per point, maximum five marks.)*

**b) Network Engineer responsibility**

- **Network installation and support.** Responsible for the design, selection, installation and support of all network and communication devices. This would include the selection of appropriate servers, routers, bridges, switches and telephony devices.
- **Desktop installation and support.** Responsible for all equipment contained on a desktop PC, PC software, printer, telephone, etc.
- **Cabling infrastructure.** Responsible for the design of the cabling infrastructure, including data and power to each desk and server area.
- **Communications.** Responsible for all communication equipment and links between offices.
- **Diagnostic.** Assists with diagnostic work concerning network traffic, failed devices, PC software contention issues.

*(One mark per point, maximum five marks)*

**c) Personal Qualities required by computer services staff**

Marks not given for obvious desirable personal qualities that apply to all jobs (trustworthy, honest, hard-working, etc). Marks will be given for any special personal qualities that can be justified for staff in Computer Services.

- **Customer focused.** Practically all staff in Computer Services will need to interact with the user staff and therefore are required to be both personable and likeable.
- **Service orientated.** Computer services is all about providing a service and so all staff must have a "service" mentality and be seen to enjoy providing excellent service.
- **Persuasive.** Be able to pacify irate users, as well as influencing peers, clients and suppliers.
- **Responsible**. Be prepared to accept a significant level of responsibility and accountability.
- **Team oriented.** Work as part of a team and be prepared to help co-workers as needs demand.
- Other acceptable qualities (examiner discretion).

*(One mark per point, maximum five marks)*

**c) ISO 9001 - Notes**

ISO 9001 management principles are:

- **Customer focus:** Organisations depend on their customers and, therefore, should understand current and future customer needs, should meet customer requirements and strive to exceed customer expectations. In a computer services context, understanding customer needs and expectations is vital.

- **Leadership:** Leaders establish unity of purpose and direction of the organisation. They should create and maintain the internal environment in which people can become fully involved in achieving the organisation's objectives. In some instances computer services have to take the lead, particularly for annual business events, such as year-end processing, where the IT activities of several departments may have to be co-ordinated.

- **Involvement of people:** People at all levels are the essence of an organisation and their full involvement enables their abilities to be used for the organisation's benefit. All services involve people – particularly computer services.

- **Process approach:** A desired result is achieved more efficiently when activities and related resources are managed as a process. System requirements for several different divisions of an organisation need to be combined. This is particularly relevant when scheduling work overnight or at weekends, where operational efficiency is paramount.

- **System approach to management:** Identifying, understanding and managing interrelated processes as a system contributes to the organisation's effectiveness and efficiency in achieving its objectives.

- **Continual improvement:** Continual improvement of the organisation's overall performance should be a permanent objective of the organisation.

- **Factual approach to decision making:** Effective decisions are based on the analysis of data and information.

- **Mutually beneficial supplier relationships:** An organisation and its suppliers are interdependent and a mutually beneficial relationship enhances the ability of both to

create value. Computer services need to establish meaningful relationships with suppliers where both parties can benefit.

*(One mark for each management principle, maximum five marks)*

**d) FAST (The Federation Against Software Theft)**

Federation Against Software Theft. Formed to prevent illegal copying and use of software under various copyright and patent laws.

Reasons why organisations should adhere to FAST:

- Avoid prosecution
- Illegal software may contain viruses
- No support from software companies available
- Bad publicity if prosecuted
- Denies software company of revenue to support or enhance product

*(One mark for each reason given, maximum five marks)*

**Examiners' comments:**

*A very popular question attempted by around half the candidates and where the majority gained a pass mark.*

*The evidence suggests that not many candidates had full knowledge of all five topics but most had good knowledge of two or three of the topics. Technical Support Management responsibility, Network Engineer responsibility and ISO 9001 Management Principles were generally understood. However, very few candidates had a detailed knowledge of FAST (The Federation Against Software Theft). There was some confusion regarding the personal qualities required by computer services staff, where most answers centred around the technical knowledge rather than the personal qualities shown in the answer pointer.*