THE BCS PROFESSIONAL EXAMINATIONS
Professional Graduate Diploma

April 2006

EXAMINERS' REPORT

Computer Services Management

General
Exactly the same comments as provided by the examiners for last year are again appropriate.

"The number of candidates selecting this module continues to rise. Although many candidates had prepared well for the examination year, and gained high marks as a result, there was evidence that some had not prepared adequately. Marks are not given for general knowledge, which anyone who uses a PC might possess, and it should be noted that at Professional Graduate Diploma level examiners require evidence of the deeper understanding that results from studying the recommended texts.

Candidates should carefully read the questions, as the precise words used provide valuable clues as to what is expected in the answer."

Many candidates did not demonstrate the required level of knowledge as identified by the syllabus. All the questions are based on topics contained in the syllabus and covered within the recommended reading lists, candidates need to be familiar with the information contained in these texts and to be able to communicate this to the examiner in the format and depth indicated by the questions.

An indication is given below of the expected answer points for this examination. However, marks were given for additional points, or valid alternative answers, where relevant to the question.

Question 1
1. A medium-sized organisation is seeking a replacement Computer Services Manager to restore confidence in its computer services function. You have applied for the position.

    The systems used by the organisation process information reliably. However, the on-line response time is poor and both the desktop equipment and the network are prone to failure. The causes of failure and the most appropriate solutions have been difficult to identify.

    As part of the selection and recruitment process for the new Computer Services Manager, you have been asked to make a presentation to demonstrate your suitability for the position. Prepare notes for the presentation to explain:

    a)   The role of the Computer Services Manager and the personal qualities required.   **(8 marks)**

    b)   Possible reasons for the poor on-line response and how the problem could be resolved.   **(9 marks)**

    c)   How an asset register system could be combined with a Helpdesk facility to identify points of failure in the network and desktop installations.   **(8 marks)**

Answer Pointers

ai) Role of the Computer Services Manager

- 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)

aii) Personal Qualities of a Computer Services Manager
A CSM would ideally need the following personal qualities:

- aptitude for leadership
- able to influence peers, clients and suppliers
- able to explain complex concepts clearly
- able to determine and address clients' needs
- able to accept a significant level of responsibility and accountability

(Role – 6 marks, qualities – 2 marks, total 8 marks)

b) Possible reasons for poor on-line response times
Insufficient network capacity. High network traffic could result in bottlenecks, contention etc. Alternatively a "rogue" network device could be flooding the network with error messages. Resolution – use network measuring software to identify cause and then take action.

Insufficient PC processing capacity. The desktop PCs could require upgrading, particularly if the systems depend on client processing at the desktop. Resolution - Audit the user requirements and capacities of the desktop installations. Make recommendations.

Insufficient server capacity. There may be bottlenecks in processing, memory, disk transfer or the file transfer capacities of the server. Resolution - Measure server capacity, balance the demand or upgrade/purchase new hardware.

Database contention/data issues. There may be contention for certain areas of the database or there could be transactions, or combinations of transactions, that cause massive disk processing. Resolution – investigate and, if necessary, request redesign of the database or data purge/reorganisation.

Application performance issue. A system problem surrounding one or more transactions could be the cause of performance problems. This could be due to misunderstandings of the data structure, poor system design or inefficient use of code. Resolution - investigate and pinpoint rogue application. Propose appropriate remedial action.

(3 marks each for any three areas identified and the resolution described, maximum 9 marks)

ci) Asset Register
Function of an asset register
A register of all assets owned or used by computer services. This is needed for legal (evidence of licence holdings), insurance purposes (total value and type of assets) and maintenance reasons (identification of common failure points and cost of repair). For each asset, a register would typically contain the following:

- Full description of item registered
- Specification
- Cost
- Date purchased
- Ownership details
- Supplier
- Maintenance agreements
- Location of asset
- Location of related documents
- History of changes
- History of faults
- Scheduled maintenance

(three marks)

cii) Function of a help desk
- Staff allocated to log all help calls and direct them to the appropriate resource and to 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

(three marks)

ciii) Identification of points of failure
Help desk faults can be recorded against assets to determine the most cost effective action. This could be the identification and replacement of unreliable equipment, advising on suitable training, to ensure maintenance schedules are not missed, etc. The history of past failures could be used to establish patterns and to enable resources to be directed to best effect.

(two marks)

Total marks (3+3+2=8 marks)

Total marks for Q1 is 25 marks (8+9+8)

Examiner's Comments
This question was set to determine how well candidates understood the role of computer services management and how a manager might deal with issues that affect many organisations.

This was a popular question that was attempted by practically all candidates.

Part "a" was answered moderately well, with many candidates able to describe the role of the computer services manager and the personal qualities required. However, a significant number failed to describe the breadth of the role and instead just concentrated on one or two key aspects of the position. Others did not mention the role at all but wrote many pages on the personal qualities of a computer services manager.

Part "b" produced many excellent answers but a number of candidates only listed one or two reasons and were marked accordingly. The suggestion that the whole service could be outsourced did not gain any marks, as this answer enabled the candidate to avoid answering the question set.

Part "c" was answered adequately by the stronger candidates, who were able to demonstrate their knowledge of asset registers, help desks and the part these play in problem resolution.

Question 2

2. As the Helpdesk Manager for a Computing Services group, you are responsible for providing support to five hundred office workers, all of whom are located on a single site within a large city.

   You are concerned about the high level of turnover of front-line support staff in your section. You believe the staff turnover may be contributing to a poor incident clear up rate and growing dissatisfaction among the customers.

   a) Write a memorandum to the Head of Computing Services describing the problem. You should discuss three techniques you propose to use to address the problem of high staff turnover. **(12 marks)**

   b) With reference to ONE of the proposed solutions, produce a list of activities which will allow you to design, implement and monitor the technique you intend to use. You should state any assumptions which you make regarding the organisation and its infrastructure and explain the reasons for including each item in the list. **(13 marks)**

Answer Pointers
a)
- Candidates should use memo format, as requested.
- Correct forms of address should be used
- The candidate should seek to build a realistic picture of the problem
- It is important that the candidate establishes credible reasons for the high turnover of staff.
This could include:
    - pay and conditions,
    - work environment,
    - poor training,
    - lack of opportunity for learning or advancement,
    - attitude of customers,
    - quality and usability of information systems available,
    - lack of variety in the work.
    - Show you have talked to the staff involved and that you believe you understand the issues.
    - Techniques for removing the problem could include:
    - asking the staff what is going wrong,
    - reviewing all the concerns,
    - showing them how management are seeking to address the issues,
    - demonstrating practical steps towards permanently solving the problems.

In section (a), up to 3 marks were awarded for the format and style of the memorandum. Up to 3 marks were awarded for each of three techniques proposed by the candidate. Marks were not awarded if the three techniques were too closely related.

b)
- Candidates should use a standard formal format for project planning - this varied according to the experience of the candidate, and any suitable format was accepted.
- Note carefully the use of the terms "design", "implement" and "monitor". This gives a strong hint as to what is expected.
- The assumptions list should describe the picture the candidate has of the environment. This provided the examiner with an understanding of the context, and the background of the candidate.

In section (b), up to 4 marks were awarded for the over style and approach taken by the candidate. Up to 3 marks were awarded for each of design, implementation and approach.

Examiner's Comments
It was clear that many candidates had direct experience of working in this type of environment. While a good proportion of candidates used this experience to good effect, a small number used the opportunity to engage in spirited criticism of their current or past employers. This approach did not result in good marks – as the content was largely irrelevant to the question.

Those candidates who achieved the high marks used the clues given in the question to provide a well-structured, coherent response. Some candidates gave a very clear set of assumptions, which gave a clear context to their response – and allowed the examiner to award marks accordingly.

While part (b) asks initially for a list of activities, some candidates did not provide the supporting statements, which were asked for later in the section. These candidates did not score well, owing the lack of depth in their answers.

Question 3
3.   You are the computer services manager for an established commercial organisation where the users enjoy high systems availability and reliability. The organisation also has a comprehensive business continuity plan that includes use of a standby computer centre, should there be a major systems catastrophe. However, pressure from competitors and overall economic trading conditions have resulted in the organisation needing to reduce expenditure. The Finance Director has commented that the current service provided by Computer Services is "too good" and it has been suggested that cost savings could be realised if a "more appropriate" level of service is provided.

   a)   Discuss the Finance Director's comment and consider whether or not a service can be "too good" in a
          commercial situation.   **(9 marks)**

   b)   Explain how any reduced service could be formalised and agreed with the organisation.   **(8 marks)**

   c)   Describe two alternative disaster contingency arrangements that could be used in place of the standby
          computer centre. Include in your answer the disadvantages of the two approaches.   **(8 marks)**

Answer Pointers
a) Service "too good"
The examiners are looking for an understanding of the issues involved rather than expecting a definitive answer. An answer to this question could start with a definition of service. Any definition given should include a need to define and quantify the service provided. Therefore if the service is "too good" then the definition of the service should be reduced. The FD should be asked to

quantify the service required and the CSM should then cost the reduced service and negotiate with the FD and the users such that a new level of service is agreed.

(9 marks)

b) Service formalisation
An SLA will be needed to formalise any reduced service. An SLA will need to be agreed and will contain some or all of the following:

- Scope of agreement/Terms of Reference
- Signatories to the agreement
- Date of next review/renewal date/notice period
- Dates of previous amendments
- Brief description of service
- Charges/payments/penalties
- Service hours
- Service availability
- User support levels
- Performance
- Details of agreed minimum functionality
- Details of any service charges involved
- Change control procedures
- Details of any planned changes
- Contingency
- Anticipated growth
- Restrictions
- Central print facilities
- Central print distribution
- User training
- Changes to SLA
- Description of change control procedures for requesting SLA amendments
- Fault reporting
- Escalation procedures
- Any other valid item

(8 marks)

c) Disaster Recovery Options
The candidate would be expected to describe alternatives to the "hot start" arrangement referred to in the question and should describe:

- **Warm Start** involves a contractual relationship with a third party vendor for the establishment of a compatible configuration facility (normally on a shared basis), for an annual subscription. The third party vendor should provide test opportunities. The advantages are lower cost compared to "hot start" and quick availability. The disadvantage is reliance on the supplier.

- **Cold Start** involves the establishment of a computer room, but with no hardware installed so there is a need to have equipment available rapidly, either in-house or externally.

Alternative answers that met the Finance Director's aim to reduce costs were also accepted (provided full answers were given and the risks of the alternative approaches were analysed).

(4 marks for each alternative arrangement, total 8 marks)

Total marks for Q3 is 25 marks (9+8+8)

Examiner's Comments
This question was set to test candidates' understanding of service and the need to provide an appropriate service in the context of an organisational need for cost savings and value.

There were some excellent answers for part "a", where candidates argued passionately from both sides of the argument. However, most candidates just scored marginal pass marks and did not rise to the challenge set by the question.

A model answer for part "b" would have described the contents of an SLA and how this could be used for the business to agree the level of service they require or are able to afford. Alternative answers that would also gain marks would include any which contained the concept of agreeing a service level or which provided specific examples of service reduction, meeting with users to discuss service etc. Unfortunately, a large number of candidates provided very sparse answers or answers that provided information on entirely different topics. As per Question 1b, some candidates suggested that the service be outsourced and, unless this was qualified by a need to agree an SLA before outsourcing the service, no marks were awarded.

There were some surprisingly good answers for part "c", although not many candidates provided the textbook "warm" and "cold" start options. Instead there were some innovative (but workable) alternative solutions involving risk reduction measures, insurance, remote sites to split processing and storage and "sister" arrangements with local organisations. Although these measures may not strictly be regarded as the ideal DR situation, they did match with the Finance Director's requirement for cost savings and were awarded marks.

Question 4
4. You work for the IT group of a hospital. You have been told by your line manager that the IT support services of four hospitals in the same city are to be merged and run as a single operation.

    a) Write a report to the Head of Administration and Support Services of your hospital - who is a non-technical manager – discussing three areas of IT service provision which would have to be considered in this merger.
        (10 marks)

    b) For ONE of the areas of IT service, discussed in your report, draft a document which covers all the stages of discussion and the relevant decisions which would be needed to transfer the service safely to the new service model. **(15 marks)**

Answer Pointers
a)
• In this scenario you are described as a technical person - you must demonstrate that you can communicate effectively with a non-technical manager.
• Candidates should use a report format which has all the standard business attributes. It is important for candidates to demonstrate that they are competent to communicate using standard business formats.
• Areas for discussion could typically include:
    • Basic logistics
    • Network connectivity,
    • Domain structures,
    • Directory infrastructures,

- Data backup solutions,
- Disaster recovery / Business continuity plans,
- Mail systems,
- Security models,
- Maintenance arrangements,

In section (a), 1 mark was awarded for the use of an appropriate format for the report. Up to 3 marks were awarded for the discussion of each of three service areas.

b)
- The essential point here is "safely transfer". A hospital represents a critical infrastructure which cannot afford downtime, loss of service elements or unreliability. Any of these could easily be life-threatening.
- Note that the candidate is asked for the "stages of discussion and decision". This clue should be followed!

In part (b), up to 5 marks were awarded for the format and style of the report. Up to 5 marks were awarded for the discussion and the decision structure. Up to 5 marks were awarded for the emphasis placed by the candidate on the safe transfer of the service area.

Examiner's Comments
There are two key elements to this question:

- The candidate must show that they can communicate technical issues effectively to non-technical managers, leading to a successful outcome. This is a very important aspect of the role of the IT professional.
- A hospital is a good example of an environment where the continuity of IT services during a period of change or service development is absolutely critical. Any service failure in such an environment could conceivably result in loss of life.

Those candidates who performed best in this question had obviously thought carefully about the context given in the question. These candidates gave carefully argued answers which addressed all the core issues – and demonstrated an appropriate professional approach to their response.

Some candidates did not adequately address these key points – and scored poorly. Candidates for papers at this level are advised to look carefully at the context they are being asked to respond to, as the scenario selected by the examiner will have a very close connection to the required answer.

Question 5

5. In the context of computer services, identify the main points of the following:

a)	The Computer Misuse Act 1990.	**(5 marks)**
b)	The Copyright, Designs and Patents Act 1988.	**(5 marks)**
c)	The Disability Discrimination Act 1995.	**(5 marks)**
d)	FAST (The Federation Against Software Theft).	**(5 marks)**
e)	The BCS Code of Conduct.	**(5 marks)**

Answer Pointers

a) Computer Misuse Act 1990

The Act makes provision for securing computer material against unauthorised access or modification and creates criminal offences for anyone doing so or attempting to do so. A person is guilty of an offence if:

- they cause a computer to perform any function with intent to secure access to any program or data held in any computer
- the access they intend to secure is unauthorised
- they know at the time they cause the computer to perform the function that that is the case
- they gain or attempt to gain unauthorised access to computer material with intent to commit further offences
- they make any unauthorised modification of computer material

(one mark for each point made, maximum five marks)

b) The Copyright, Designs and Patents Act 1988

Description of Act

The Act specifically includes a computer program within the meaning of a 'literary work'. When a software product is purchased, the purchaser merely buys the right to use the software in strict accordance with the terms and conditions within the licence agreement. Section 16(1)(a) of the 1988 Act states that any person who does a restricted act or authorises others to do such an act without the consent of the owner of the copyright will infringe the copyright.

Infringement

- Copying or reproducing software or hardware in any material form
- Issuing copies of software or hardware to the public when copies have not previously been in circulation
- Performing, showing or demonstrating the software or hardware in public
- Broadcasting it
- Making an adaptation or translation of it
- Reproducing the software or hardware

(five marks)

c) The Disability Discrimination Act (DDA)

The employment provisions of the government's Disability Discrimination Act (DDA) became effective on 2nd December 1996.

The Disability Discrimination Act (DDA) has significant implications for companies who employ more than 20 people.

The Act makes it illegal to unreasonably discriminate against existing and potential employees on the basis of their "disability", and employers are charged with a duty to make "reasonable accommodations" in the employment of people with disabilities.

The definition of disability is very broad. It will include, for example, many people with significant upper limb disorders ("RSI"). This is NOT an issue solely about equal opportunities in recruitment. Much more frequently it arises when an existing, non-disabled employee who is trained and experienced, becomes disabled by illness or accident.

Computers and the Act
Computers are, of course, an increasingly important tool in an increasing number of jobs.

Adaptive and alternative technologies, from simple and free of charge to sophisticated and more expensive, can make a computer accessible by people with disabling conditions of all kinds, temporary and permanent, physical and sensory.

However, this can only be done when the alternatives are known about and understood and when the computer systems in use are set up so that the most common adaptations can be used.

What does this mean for employers?
The Act states that employers have a legal obligation.

For example, it is likely to be held to be discriminatory, and therefore illegal to:

- Fail to make simple adaptation available, such as alternative keyboards and "mice" where necessary.
- Fail to arrange a proper assessment of needs and options for an employee with a disability.
- Implement an IT strategy or applications that cannot accommodate the most frequently needed adaptations and alternatives.

(one mark for general description of the Act, two marks each for its applicability to computers and the implications for employers, 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)

e) BCS Code of Conduct

General
The Code sets out the professional standards required by the Society as a condition of membership and governs personal conduct as an individual member of the BCS.

Public interest
Work is to be performed with due care and diligence and in the interests of system users. If your professional judgement is overruled, you shall indicate the likely risks and consequences. You shall conduct your professional activities without discrimination against clients or colleagues. You shall reject any offer of bribery or inducement.

Duty to relevant authority
You shall avoid any situation that may give rise to a conflict of interest between you and your relevant authority. You shall make full and immediate disclosure to them if any conflict is likely to occur or be seen by a third party as likely to occur.

Duty to the profession
You shall uphold the reputation and good standing of the BCS in particular, and the profession in general, and shall seek to improve professional standards through participation in their development, use and enforcement.

Professional competence and integrity
You shall seek to upgrade your professional knowledge and skill, and shall maintain awareness of technological developments, procedures and standards which are relevant to your field, and encourage your subordinates to do likewise. You shall not claim any level of competence that you do not possess. You shall only offer to do work or provide a service that is within your professional competence.

(one mark for each point raised/explained maximum five marks)

Total marks for Q5 is 25 marks (5+5+5+5+5)

Examiner's Comments
This question sought to test candidates' understanding of legal, regulatory and professional issues that affect computer services. This question resulted in some mixed answers. Most of the candidates who attempted this question knew just two or three of the five components, generally just parts "a", "b" and "e". This meant that few candidates gained high marks, with most gaining approximately half the total marks available. There was some evidence of candidates running out of time.