

**THE BCS PROFESSIONAL EXAMINATION  
Professional Graduate Diploma**

**April 2003**

**EXAMINERS' REPORT**

**Computer Services Management**

**General**

The number of candidates selecting this option continues a steady increase year on year, with a 25% rise this year. Most of the candidates appeared to have had considerable experience and consequently performed well in the examination. Unfortunately, a minority did not read the questions adequately and either omitted sections or answered a question which they invented. Such candidates reduced the overall pass rate from 89% last year to 76% this year, with a mean of 43%.

Some candidates ignored the requirement to answer just three questions and wasted valuable time answering additional questions. Only three questions are summed to give the overall mark. Other candidates relied on repetition of the same points in order to fill the pages and gained no marks for their repeated efforts.

Candidates would find it helpful to examine the syllabus and to study this in conjunction with the operation of computer services within their own organisations.

Although marks are not given for the structure of answers, the use of a structure will enable candidates to recall vital additional information that could make the difference between a basic pass and a fail. Candidates are therefore advised to spend a few moments considering the format of any answer before putting pen to paper.

An indication is given below of the points expected; however any valid point which was relevant to the question received marks.

**Question 1**

**The Managing Director of a large organisation has heard of the Software Capability Maturity Model and has requested further information. As the Computer Services Manager you have been asked to prepare a report to:**

- a) Discuss the Software Capability Maturity Model and its relevance to computer services. (5 marks)**
- b) Outline the stages of maturity. (15 marks)**
- c) Describe how an organisation at one level could progress to a higher level of the model. (5 marks)**

This question was selected by very few candidates of whom most failed, some candidates confusing CMM with the software lifecycle model

Of the 9% of candidates who attempted this question only 9% achieved a pass standard. The average mark was 4, which indicates just how poor the answers were from most candidates.

This question was in three parts with each successive part requiring a deeper level of knowledge and understanding. Most had a general idea of the concepts and scored some marks on the first part of the question. The second part required an understanding of the levels and some candidates appeared familiar with just one or two of the levels. Although the third part of the question an explanation of how organisations moved through the levels, many candidates either just repeated information already given in the first two parts of the question or omitted this part entirely.

### Answer Pointers

#### a) General description of CMM

The Capability Maturity Model for Software is a model for judging the maturity of the software processes of an organisation and for identifying the practices that are required to increase the maturity of these processes.

The Capability Maturity Model for Software describes the principles and practices underlying software process maturity and is intended to help software organisations improve the maturity of their software processes in terms of an evolutionary path from ad hoc, chaotic processes to mature, disciplined software processes.

It is important as it is an objective assessment of an organisations sw capability with a proven approach to improvements

(five marks, based on quality of description)

#### b) The CMM levels:

**Initial.** The software process is characterised as ad hoc, and occasionally even chaotic. Few processes are defined, and success depends on individual effort and heroics.

**Repeatable.** Basic project management processes are established to track cost, schedule, and functionality. The necessary process discipline is in place to repeat earlier successes on projects with similar applications.

**Defined.** The software process for both management and engineering activities is documented, standardised, and integrated into a standard software process for the organisation. All projects use an approved, tailored version of the organisation's standard software process for developing and maintaining software.

**Managed.** Detailed measures of the software process and product quality are collected. Both the software process and products are quantitatively understood and controlled.

**Optimising.** Continuous process improvement is enabled by quantitative feedback from the process and from piloting innovative ideas and technologies.

(three marks for each level correctly described, maximum fifteen marks)

### **c) Moving through levels**

Apart from Level 1, each maturity level is decomposed into several key process areas that indicate the areas an organisation should focus on to improve its software process.

Each key process area is described in terms of the key practices that contribute to satisfying its goals. The key practices describe the infrastructure and activities that contribute most to the effective implementation and institutionalisation of the key process area. Organisations need to implement these processes to achieve full maturity on their current levels and enabling transition to the next level.

(Five marks)

### **Question 2**

**You are the IT Director of a medium sized company based in the UK. While you are overseas on holiday an anonymous letter is received by the Company Secretary. This letter demands a large sum of money and claims that the network security of the company has been compromised.**

**a) While you are waiting for a flight back to the UK you need to send a list of actions the company needs to take immediately. Produce a list of five actions and explain the relevance of each action you suggest.**

**(15 marks)**

**b) On your return to your office, you find that the situation has become more complex. The national press agencies have obtained details of the story and the Chief Executive is under pressure to make a statement to the press within twelve hours. Draft a statement for the Chief Executive outlining what the company is doing in the face of this problem. Detail what information you would *not* include in this statement, and why.**

**(10 marks)**

Candidates who attempted this question generally had some interesting ideas about how this scenario should be handled. A few exceptionally good responses were received, which suggested that these candidates had had real world experience of policy development or operations in this area. A common sense approach was expected and those candidates who did so, combined with appropriate broad technical understanding, gained a good pass mark.

Of the 66% of candidates who attempted this question 93% achieved a pass standard. The average mark was 12.

In section (a), a maximum of three marks were given for each of the five points. In section (b), up to five marks were awarded for the content included in the statement, up to two marks for the style with which the content was delivered and up to three marks for the definition of the information which would not be included in the statement.

### **Answer Pointers**

- The scenario may be unusual, but the question is really a standard disaster recovery (DR) exercise.
- IT staff at the Head Office site should have procedure based responses lined up for such eventualities.
- Company Secretary should declare the emergency and the policies should act without the need for the IT Director to intervene.
- Decision to involve external agencies (Police, CERT etc) will usually be taken by senior management under legal advice.
- IT staff will open a log on the problem as soon as a major problem was recognised. Log is physical, bound, page numbered, signed off by shift leader on each page.
- Should be prepared to secure complete sets of backup media for evidential purposes. Note that these may be impounded if a major crime is suspected, so operations staff will need to source replacements.
- Cold and Warm Start DR sites should be readied to ensure business continuity.
- Chief Exec should provide open but guarded statement that doesn't give the cracker any information they don't already have. Liaise with external agencies to check the approach.

### **Question 3**

**You have recently been employed by a company which for many years has spent little time or money on its systems and procedures. The service provided to the end users has been generally poor and is typified by frequent periods of downtime.**

- a) **Prepare a report for the Computer Services Manager to explain how risk management techniques operate. (12 marks)**
- b) **Discuss how these techniques could be applied to minimise or reduce the effect of future breakdowns. (13 marks)**

### **Answer Pointers**

#### **Report:**

- Risk management will consist of the formal consideration of all threats to a computer facility
- Risks should be ranked in order based on the combined frequency/severity.
- High frequency/low severity breakdowns may be considered ahead of low frequency/medium severity breakdowns.
- The cost of the reducing or transferring the risk should be estimated and compared with the benefits that will arise.
- A formal approach can be used to justify the provision of the resources required

- A formal approach could also be used as a justification for management to accept the risk

(Two marks for each point raised, maximum twelve marks).

Discussion of techniques:

- **Analysis of threats.** All activities under consideration need to be considered to identify potential threats. In computer services these could range from simple power failures to total loss of the computing facility.
- **Determine frequency.** The probable frequency needs to be determined. This can be roughly determined by weighting frequencies on a scale of 1 to 4, where 4 is high frequency.
- **Determine severity.** The probable severity needs to be determined. This can be roughly determined by weighting severity on a scale of 1 to 4, where 4 is high severity.
- **Rating of threats.** The product of frequency and severity provides a rating of the risks with the high frequency/high severity risks appearing high on the list. Special consideration should be made for the very high severity/low frequency threats - such as total loss of computer facility.
- **Countermeasures.** Once identified, appropriate countermeasures to the risks can be put in place. These can range from simple risk transfer (insurance) to the establishment of a DR plan.

(two marks for each step of the process explained, plus three marks for any examples that illustrate the points made, maximum thirteen marks)

#### Question 4

**The increasing cost of maintaining desktop software in your organisation is causing concern. While the majority of the administrative staff insist that you should continue to provide the latest versions of the commercial office suite currently in use, the research and development staff propose that the whole organisation should move to a low cost open source product.**

- In a briefing note to the Board, outline five points which would need to be satisfied before the change of product could be sanctioned by the organisation. (10 marks)**
- Produce a project plan to show how the organisation could migrate from the current software environment to the new product over a four month period. Include a bulleted list of key stages, and explain how success could be measured at each point. (15 marks)**

In a number of cases, candidates who attempted this question placed much greater emphasis on the first part of their answer - despite the split of the marks in favour of the second part. In these cases, the project plans (part b) were often lacked enough detail, or were simply inadequate - and they were unable to gain marks as a result. A number of candidates appeared to have problems with the concept of project planning - and while any project methodology was welcome they failed to structure their response in a coherent way.

In section (a) up to two marks were awarded for each of the five points which would need to be satisfied. In section (b) up to five marks were awarded for the production of a credible plan, up to five marks for the definition and explanation of the key stages, and up to five marks for the description of how success would be measured at the key stages.

Of the 84% of candidates who attempted this question 73% achieved a pass standard. The average mark was 11.

### **Answer Pointers**

- What is the key driver for change? Is cost absolutely critical, or is the existing level of compatibility (inside and outside the organisation) an important factor?
- Lots of scope for change management discussions.
- Look at business requirements for the two groups of users. What are the key collaborations etc.?
- Ideally, all staff should be using the same version of the same product - but may not matter what that is if no external collaborations needed.
- Don't underestimate the costs of retraining, plus the hidden costs of reduced productivity during and after the training period.
- Project plan can be any format that meets the requirement - methodology is not critical. Should include standard components such as review of objectives, senior management signoff, procurement of services/supplies, pilot with key and representative users, review, rollout of training, clinics for user support, final report...

### **Question 5**

**As the Computer Services Manager identify the most important points of each of the following for your Board of Directors:**

- **The Computer Misuse Act 1990**
- **Copyright, Designs and Patents Act 1988**
- **TQM**
- **The advantages and disadvantages of facilities management**
- **Principles of the BCS Code of conduct**

**(5 x 5 marks)**

Most of candidates who attempted this question provided answers which demonstrated they had good knowledge of just two or three of the required subject areas and provided vague answers for the remainder. There were some candidates who provided excellent answers and consequently a wide range of marks were given for this question. Of the five

subject areas, the facilities management area consistently gained high marks with the BCS Code of Conduct gaining the lowest marks.

Of the 77% of candidates who attempted this question 60% achieved a pass standard. The average mark was 11.

### **Answer Pointers**

#### **Computer Misuse Act 1990 - Notes**

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 the description of the Act and a further four marks for any four offences described)

#### **Copyright, Designs and Patents Act 1988 - Notes**

##### **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

(two marks for the description and one for each infringement, maximum five marks.)

### **TQM - Notes**

- TQM = Total quality management
- Based on doing any process correctly the first time
- Organisations need to identify customer/supplier relationships for all departments
- Process of continuous improvement
- Special considerations for IS as a service (supplier) area (although user departments will supply IS for some aspects)

(One mark for each point described, maximum five marks)

### **Advantages/Disadvantages of Facility Management - Notes**

#### **Advantages**

- Ability of organisation to concentrate on core business
- Specialist knowledge and greater experience available
- No need to keep up to date with technology change
- Reduced training costs
- Other reasoned advantage

#### **Disadvantages**

- Loss of control
- Operations could be moved to a remote international location
- Total dependence on the FM company
- Other reasoned disadvantage

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

### **BCS Code of Conduct - Notes**

- **Description.** Professional members of the Society undertake to adhere to BCS code of conduct as a condition of membership.
- **Integrity.** A member will always behave with integrity and will not lay claim to any competence not possessed.
- **Confidentiality.** A member will act with complete discretion when entrusted with confidential information.
- **Impartiality.** A member will always act impartially when giving independent advice and in doing so will always disclose any relevant interests.
- **Responsibility.** A member will always accept full responsibility for any work he undertakes and will do any work with integrity.

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