

THE BCS PROFESSIONAL EXAMINATION

Diploma

April 2004

EXAMINERS' REPORT

Professional Issues in Information Systems Practice

General

The pass rate was much better than in the previous sitting, October 2003, although not quite as good as in April 2004. Apart from question 3, which was clearly unpopular, there were no major differences in the popularity of the questions. Questions 1 and 2 attracted the best answers on average and questions; 3 and 6 the worst.

Some candidates performed extremely well and gained very high marks. As usual, the commonest fault was candidates' inability to apply their knowledge to simple scenarios. There is little point in acquiring knowledge of this type unless one can apply it.

Note that the references to syllabus sections in what follows are references to the *new* syllabus, except where otherwise stated.

Question 1 (syllabus section 2)

- a) Why should a manager delegate authority? (5 marks)

Section (a) was not answered comprehensively, with many candidates putting forward only two or three reasons. Five reasons were sought with 1 mark for each. The following is a suggested list – other relevant points raised were allocated marks.

- A manager's time is limited.
- Managers rely on others with specialized skills and knowledge.
- It aids staff development and succession.
- It provides staff with a degree of independence and the right to make judgments.
- It helps build team spirit.

- b) Have advances in information systems over the past twenty years helped increase or decrease delegation of authority to employees? (13 marks)

Section (b) was poorly answered by most of the candidates. Some concentrated only on the Internet to explain the impact information systems have had on delegation of authority to employees. A number of candidates spoke at length about delegation, but failed to explain the impact of information systems.

Clearly advances in information systems have reduced the need for staff who carry out routine tasks that follow set procedures. Many jobs that are routine in nature have been lost as have the jobs of the supervisors. A consequence of the higher productivity generated by information systems is the demand for higher skilled workers. Companies now demand more creativity and responsibility from their employees, which in turn has resulted in an increase in the delegation of authority as more and more is demanded and expected of employees.

- c) Why does an organisation require a structure? (7 marks)

Section (c) was well answered by most candidates. A number of candidates explained how various structures work (hierarchical, functional, geographical and matrix) to help demonstrate why an organisation requires a structure.

An organisation requires a structure to help it implement its chosen strategies. Changes in the organisation's goals will be reflected in the strategies and are likely to be reflected in the organisation's structure. For example, if an organisation is organised along product lines, then deciding to develop and market new products may require expanding some units of the organisation or creating new ones, therefore changing the organisation's structure.

Question 2 (syllabus sections 5 and 6)

This question was answered in a fairly reasonable manner. Most candidates were able to apply the principles of the DPA 1998, CMA 1990, Copyright Designs and Patents Act 1988, and Trademarks Act 1994 to answers the question.

- a) Briefly outline the protection offered to organisations conducting electronic commerce by the UK Computer Misuse Act 1990. (6 marks)

CMA 1990 created three new criminal offences: unauthorised access, unauthorised access with intent to commit a further criminal offence, Unauthorised modification of computer materials. The third of these is the most directly relevant to organisations conducting e-commerce.

- b) Company X creates an animated character for its website. Explain why and how the company might wish to protect the animated character using copyright and/or trademark legislation.

(12 marks)

Copyright protection is automatically available and the company need do nothing to obtain this protection. However, it is limited because it specifically protects against copying. Trademark protection, which is best obtained by registrations, gives broader protection, since it will prevent similar but not identical marks being used to market similar goods.

- c) Discuss how the use of cookies on an organisation's website might potentially infringe the UK Data Protection Act 1998. (7 marks)

Cookies may gather personal data in an unfair manner under DPA 1998, that is, without the permission of the data subject and/or for purposes other than those stated.

Question 3 (syllabus sections 3, 4 and 6)

A new company has been established to develop a technological innovation exploiting the next generation of mobile phones.

- a) The estimated initial cost of developing the technology is £3 million. The net income is initially anticipated to be £400,000 per annum rising by £100,000 per year. Ignoring the time value of money develop a simple cash flow projection and deduce the payback period. (8 marks)

This question tested whether candidates understood that payback period could be calculated using a cash flow projection. Most candidates who understood the

question succeeded in achieving full marks. Where errors in arithmetic were evident or elements of the cash flow were missing then these were allowed for in the marks. The use of a simple cost/net benefit division was not allowed. The model answer is:

	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
Cash out	3000000				
Cash in	400000	500000	600000	700000	800000
Cumulative	(2600000)	(2100000)	(1500000)	(800000)	0

The payback period is therefore five years.

- b) To support this development it is necessary to install a local area network in the company. The network costs £30,000 and is expected to be replaced after three years. Explain how this purchase will affect the company accounts over that period. **(7 marks)**

It was acceptable for candidates to answer this question in words or diagrammatically or numerically. The key effects on the accounts are:

- in the first year, there will be an outflow of 30,000 shown on the cashflow statement, a fixed asset worth 20,000 on the balance sheet, and depreciation of 10,000 on the P&L;
- in the second year, there will be nothing shown on the cashflow statement, a fixed asset worth 10,000 on the balance sheet and depreciation of 10,000 on the P&L.
- In the third year, there will be nothing shown on the cashflow statement, no asset on the balance sheet, and depreciation of 10,000 on the P&L.

Most candidates were able to show the depreciation, but some missed the detail on the balance sheet.

- c) Explain how you would protect this innovation from copying or imitation, stating any assumptions you make. **(10 marks)**

Some assumptions had to be made by the candidate, but the focus of this question was on the patent protection. Copyright will subsist in the code anyway and there is no need to do anything to protect the code from copying. The main danger is that someone copies the essential ideas, whatever they are. Provided that the innovation is genuinely new and involves an inventive step, the appropriate mechanism would be a patent. It has now become possible to patent innovations that are software based, although it is not clear how well these patents will stand up in court, so that this should be no bar to patenting, but many overcame any confusion by assuming that the innovation was more physical in nature. Credit was given for details of the patent process. Candidates generally overlooked the need to take out patents in the countries that will constitute the main market for the device; this is best done via the WIPO. Other forms of IPR protection were allowed for if assumptions were made that supported those points including employment contracts, but some missed the point by discussing technical aspects such as protecting the network.

Question 4 (syllabus section 1)

- a) What are the characteristics shared by most professions? **(9 marks)**

Here candidates were expected to explain the concept of a profession (NOT a professional). Bott et al describe the main characteristics as:

- a collective body with controlled entry - based on understanding of body of knowledge;
- self governing and self regulatory - has a code of conduct;
- established by royal charter or statute - defines extent of responsibilities and authority.

Alternatively characteristics such as those given by Beynon-Davies : corpus of knowledge/skills; formal body; recognition were accepted.

Some of the marks required a brief discussion of the differences between professions/why these characteristics make a profession, e.g. doctors, lawyers, accountants, and engineers all fall within the definition, but differ with regard to the above characteristics e.g. engineers are under Royal Charter not statute.

In general candidates highlighted aspects of the main characteristics but only a few better candidates were able to turn this into a wider discussion.

- b) Describe the BCS activities that support its claim to be a professional institution. (7 marks)

It was expected that a clear description of a range of BCS roles would be provided, such as, professional development, link to Eng Council (eg CEng), professional groups (e.g. specialist groups/branches), advisor to government, advancement of public knowledge and understanding. Candidates generally did well on this section.

- c) Discuss whether those working in the Information Systems field in general (i.e. not just members of the BCS) can be considered to constitute a profession. (9 marks)

Candidates were expected to discuss the characteristics identified in part (a) in terms of IS, as indicated below, but discussion about the idea of semi-profession and the problems within the IS field was also rewarded.

Professional body: BCS/IEE/etc royal charter, Regulates membership through exams etc, registration of members, code of conduct.

Body of knowledge: Knowledge embodied in methods, university/specialist groups develop knowledge, skills constantly changing

Recognition : BCS – Royal charter but not wide public recognition, minority of “IS professionals” are BCS members, still early in the development process, problems with IT/IS do not give it a good reputation.

In general candidates made a poor attempt at answering this broader question. They either reflected a simple view such as ‘no they are not professionals because they are not members’ or ‘yes because they have relevant skills’. The better candidates were at least able to extend these arguments to show how non-members reflect [or not] the features of a professional member [e.g. by following the Code of Conduct, law, professional development].

Question 5 (syllabus section 7)

- a) Briefly summarise the key content of the BCS Code of Conduct. You are not expected to detail all the clauses. (8 marks)

This part of the question was well answered by most candidates. Even though the question said “You are not expected to detail all the clauses”, many candidates did.

Candidates were expected to outline the main sections in the code of conduct (either the new version or the previous one), at the level exemplified by the following:

The public interest. This describes member's responsibility to be aware of, and comply with, relevant aspects of the law and other forms of regulation and, more generally, to safeguard public health, protect the environment and have regard for human rights [2].

Duty to employers and clients. This deals first with due diligence, warning clients of the consequences of their decisions and time and cost overruns, and maintaining confidentiality. It then goes on to require members to avoid various corrupt practices such as the giving or taking of bribes, misrepresentation or false claims of independent judgement

[2].

Duty to the profession. Generally acting in such a way as to uphold and enhance the standing of the profession, including advancing public knowledge, countering false or misleading statements (and not making them themselves), and encouraging professional development, particularly for new entrants to the profession

[2].

Professional competence and integrity. Keep up to date, conform to good practice, don't claim competence that you haven't got, accept full responsibility for your work and avoid conflicts of interest.

[2]

- b) Explain what is meant by ethics and how ethics is relevant to software professionals. (8 marks)

This section was poorly answered. Some candidates referred to a BCS code of ethics, which doesn't exist. Very few candidates explained how ethics is relevant to software professionals.

Ethics is the study of right and wrong in relation to human actions [2] especially where there is a moral dilemma with unclear (e.g. legal) guidance [2].

The relevance to software professionals: sometimes face new areas because of advances in technology [e.g. use of IT in medicine (e.g. genetics)] [2]; IT can facilitate certain actions that would otherwise be impossible [e.g. accessing someone's confidential data] [2].

- c) Discuss how the key elements of the BCS Code of Conduct, which you described in part (a) of this question, can assist you as a software engineer when faced with a difficult situation, indicating briefly the problems that can arise in relying entirely on such a code to guide your actions.

(9 marks)

This section wasn't as well answered as section (a), possibly reflecting the "commit to memory" nature of section (a) compared with "the need to apply nature" of this section.

The Code of Conduct is defined as a formal expression of the expectations on their members. This is what is considered appropriate behaviour by the profession [3].

Software engineers can draw on the Code to guide them in difficult situations [e.g. when asked by a client to do some extra work in your own time at a rate that undercuts your company]. If necessary the code can be used to aid the professional in an argument (say with a manager or a client) [3].

The problem is that sometimes the code can have clauses that conflict in a given situation, e.g. to maintain confidentiality and to uphold public health when a company is delivering inadequate software for a hospital [3].

Question 6

Either (old syllabus section 9)

This question was generally answered well, with students explaining how work breakdown structures relate to Gantt and Pert charts. However, the potential benefits of systems development methodologies for IT project management appeared less familiar to students.

- a) Explain what work breakdown structures are and how they relate to Gantt and Pert charts.

(13 marks)

A work breakdown structure shows the tasks, activities, stages, and phases in an IT project. Pert charts shows tasks and dependencies, Gantt charts show task time frames and resource allocations.

- b) Discuss the potential benefits of a systems development methodology of your choice with regard to managing IT projects. Relate your answer to the project management techniques of work breakdown structures, Gantt and Pert charts.

(12 marks)

A systems development methodology typically breaks a project into stages and activities making construction of a work breakdown structure easier. Methodologies also provide a framework of related activities that makes Gantt and Pert chart construction easier. Methodologies provide a 'standardised' way of developing IT systems that can assist in providing 'standardised' work breakdown structures.

or (new syllabus section 8)

Candidates who answered this part of the question seemed to have very little knowledge of the topics.

- a) What is human resource planning and what purposes does it serve?

(15 marks)

Human resource planning is the systematic approach to recruitment, retention, utilisation, improvement and disposal of an organisation's human resources. It's purpose is to ensure that the organisation always has available the human resources necessary to exploit its other assets, within the limits of what is financially and legally acceptable and in accord with the organisation's ethos.

- b) Describe briefly the types of discrimination currently covered by anti-discrimination legislation in the UK.

(10 marks)

Anti-discrimination legislation makes discrimination on grounds of sex, race or ethnic origin, sexual orientation, and disability unlawful in all matters concerned with employment and vocational training. Discrimination on grounds of sex and race or ethnic origin is unlawful in a much wider area, including the provision of services and accommodation.