THE BCS PROFESSIONAL EXAMINATIONS
Diploma

October 2005

EXAMINERS' REPORT

Professional Issues in Information Systems Practice

General Comments

The pass rate was considerably higher than in previous October sittings, albeit not quite as good as that achieved in April sittings. In comparison with previous sittings, there were more candidates getting marks above 70%, with one candidate (non-UK) achieving a mark of 93%, far higher than any candidate has previously achieved on this paper.

Questions 2 was very much the least popular question and those who answered it generally answered it poorly. In contrast question 4 was the most popular question and was generally very well answered.

The usual general comments can be made: many candidates lost marks because they:

- did not answer the question set (e.g. in question 1(a) they described the present structure of the Engineering Council rather than the historical background to its setting up);
- could not apply general principles and precepts to specific situations (e.g. in question 1(c) they failed to explain how the general principles of the Code of Conduct related to the specific situation);
- have an inadequate command of English (which may account for some of them not answering the question as set).

Question 1 (syllabus sections 1 and 8)

a) Explain the historical background to the setting up of the UK Engineering Council. (5 marks)

[Syllabus section 1]

The answers were not always sufficiently precise but most candidates were able to identify key stages of the development. The commonest error was to deviate to describing the structure of the professional institutions or the BCS history. The question required a simple outline of the history, such as:

Until the 1960s, the engineering institutions in the UK were completely separate from each other and had no formal links. In the 1960s the presidents of the institutions agreed to set up a body called the Confederation of Engineering Institutions, to represent and promote the profession as a whole. It quickly became a chartered body. In the late 1970s it was apparent that, despite the efforts of the CEI, the engineering profession in the UK did not enjoy the same status as it did in other countries and the CEI pressed the then Labour government to set up a Royal Commission to look into the profession. The Commission was chaired by Sir Monty Finniston and its report became known as the Finniston Report. This report recommended the establishment of the Engineering Council as a statutory body, comparable to the General Medical Council. By the time the Commission had reported, there was a new, Conservative government. The new government said that it would accept the report's recommendations but, in fact, did not quite do so. It established the Engineering Council as a chartered body not a statutory one.

b) Describe briefly the six principal duties of the UK Engineering Council. (12 marks)

[Syllabus section 1]

Again candidates had a general idea of the duties of the Engineering Council, but their ideas were often imprecise. The main error here being the confusion between the Engineering Council roles & duties with those of the British Computer Society. A clear statement of the following duties was required:

- set standards of education, experience and competence for initial registration as a qualified engineer and for continuing professional development;
- maintain registers for Chartered Engineers, Incorporated Engineers, and Engineering Technicians;
- license appropriate professional bodies to admit their members to these registers;
- maintain registers of accredited or approved programmes of education;
- act as the UK representative to relevant international bodies;
- receive and respond to requests for assistance and advice from the government.

c) A consultant is advising a local business on the introduction of a new software system to maintain its accounts. The consultant considers that a package called Computerised Business Accounts (CBA) best suits the client's needs and therefore recommends it. However, the consultant's best friend is the marketing manager for the company that produces CBA. Discuss how the BCS Code of Conduct relates to this situation. (8 marks)

[Syllabus section 8]

It was quite pleasing to see how well candidates were able to draw out relevant aspects of the Code to address this scenario, such as those below. It was expected that candidates would discuss the way that these clauses would inform the consultant's actions and this was done well by some candidates. Some answers either just repeated the Code verbatim, for which no credit was given, others appeared to select clauses at random, without really linking them to the scenario. Key clauses that were expected to be used were (note that this refers to the latest version of the Code):

Clause 7 of the BCS Code of Conduct directly addresses this situation: "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."

This conflict links directly to clause 9 "You shall not misrepresent or withhold information on the performance of products, systems or services, or take advantage of the lack of relevant knowledge or inexperience of others." And so, as some candidates argued, so long as they made the conflict clear and took steps to ensure that there was no misrepresentation the choice of CBA might be alright.

Related to this problem might be Clause 6 "You shall reject any offer of bribery or inducement" and clause 8 "You shall not disclose or authorise to be disclosed, or use for personal gain or to benefit a third party, confidential information except with the permission of your relevant authority, or at the direction of a court of law."

Question 2 (syllabus sections 5 and 9)

a) You are the group IT director for a large multinational finance company headquartered in London, with ten major offices located in ten major cities throughout the world. The CEO has decided to include you and all other group directors in a management by objectives (MBO) process. Suggest four objectives that you might lay down for yourself, explaining why you think they are important. (12 marks)

[Syllabus section 9]

This section was poorly answered by the majority of respondents. Many explained the term MBO and wrote nothing else. Some respondents set objectives for the organisation. Only about 10% answered the question, i.e. suggest four objectives that **you** may lay down for **yourself.**

Examples of four such objectives are:

- Implement a matrix management structure by a certain date (1). This will make IT personnel accountable to the business function for results (1) and at the same time enables them to be career managed by an IT professional (1).
- Develop a set of group IT policy and standards by a certain date (1). This will help ensure consistency of systems delivery and operation throughout the group (2).
- Implement a group IT staff development plan by a certain date (1). This will provide all IT personnel with the opportunity to learn about different systems and different business functions (1) and at the same time provide the business with a wider choice of staff allocation for IT positions (1).
- Only allow group IT to purchase IT capital assets (1). This policy will help achieve economies of scale (1) and help ensure tight budgetary control (1).

b) Explain briefly why the Regulation of Investigatory Powers Act 2000 was felt to be necessary and outline its provisions. (13 marks)

[Syllabus section 5]

Only some 20% of respondents demonstrated an understanding of how the Act came into being, with only a small minority referring to EU law. Approximately 50% gave a good account of the Act's provisions, with the other 50% not knowing or appearing to guess.

UK law does not recognise any general right to privacy but the European Convention on Human Rights, which forms part of UK law, says that, "Everyone has the right to respect for his private and family life, his home and his correspondence." Concern over breaches of privacy through telephone tapping and e-mail monitoring, by employers as much as by the security services, led to the passing of the Regulation of Investigatory Powers Act 2000, which sets up a framework for controlling the lawful interception of computer, telephone and postal communications (4).

The Act allows government security services and law enforcement authorities to intercept, monitor and investigate electronic data only in certain specified situations such as when preventing and detecting crime. Powers include being able to demand the disclosure of data encryption keys (4).

Under the Act and the associated regulations, organisations that provide computer and telephone services (this includes not only ISPs and other telecommunications service providers but also most employers) can monitor and record communications without the consent of the users of the service, provided this is done for one of the following purposes:

1. to establish facts, for example, on what date was a specific order placed;
2. to ensure that the organisation's regulations and procedures are being complied with;

3. to ascertain or demonstrate standards which are or ought to be achieved;
4. to prevent or detect crime (whether computer-related or not);
5. to investigate or detect unauthorised use of telecommunication systems;
6. to ensure the efficient operation of the system, e.g., by detecting viruses or denial of service attacks;
7. to find out whether a communication is a business communication or a private one (e.g. monitoring the e-mails of employees who are on holidays, in order to deal with any that relate to the business);
8. to monitor (but not record) calls to confidential, counseling help lines run free of charge by the business, provided that users are able to remain anonymous if they so choose.
[Candidates were not expected to reproduce this list, but only to specify some examples.]

Organisations intercepting communications in this way are under an obligation to make all reasonable efforts to inform users that such interception may take place. (5)

Question 3 (syllabus section 6)

Scramble is a recently established computer games company. It has devised a company logo that consists of yellow cloud, on a pale blue circular background, with the word 'SCRAMBLE' written around the circumference. Scramble is just about to release its first game, an adventure game called Aeneid, based on the famous Latin epic poem; this game includes a novel piece of hardware that attaches to a USB port and simulates the sensation of being at sea in an ancient boat.

a) Discuss how Scramble could protect its company logo from misuse by other companies or individuals. (10 marks)

b) Discuss the mechanisms by which Scramble might protect the ideas and the implementation of the Aeneid game, and the extent to which this protection would be effective. (15 marks)

Both parts of this question were answered quite well with students displaying a reasonable knowledge of the Trademarks Act 1994, and the Copyright, Design and Patents Act 1988.

a) The company could register its company logo as a trademark under the UK Trademarks Act 1994. The company would need to establish that its logo is not identical with or similar to an earlier trademark. Registration in the UK only protects the logo in the UK and appropriate registrations through other organisations would be necessary for wider protection. Registration is not essential for protection in the UK since common law action for the tort of passing off could be taken against anyone misusing the logo. The trademark registration would make it a criminal offence for anyone else to apply the logo to their goods, to import, sell or possess by way of trade goods bearing the logo without authorization.

b) Copyright would prevent other companies or individuals from: making copies of the game; issuing copies of the computer game to the public; selling or renting copies of the game without a license; making an adaptation of the game; doing any of the above in relation to a substantial part of the game.

Copyright provides only very limited protection against individuals who infringe it purely or their own use. It gives much stronger protection against infringement for commercial purposes.

It should be possible to patent the device for simulating the effect of being at sea, provided it was new and non-obvious. This would prevent any other company from building a device working in a similar way, for 20 years.

It would be difficult to protect the ideas behind the game, although the law relating to confidential information might be useful in preventing ex-employees taking the ideas to other companies.

Question 4 (syllabus sections 3 and 4)

a) Employees of Mango Software plc work a five day week. They are entitled to 20 days holiday a year in addition to the 10 annual public holidays. On average, each employee loses ten working days per year through sickness. Syniad aims to allow each employee 15 days per year for training. Experience shows that employees spend an average of five days a year unproductively, as a result of scheduling problems. In accordance with government regulations, employers must pay social security contributions equal to 10% of salary.

Calculate the average direct cost of one day's work from an employee earning £20,000 per year. State explicitly any assumptions you make. (10 marks)

[Syllabus section 4]

As expected, candidates tended to score highly in this section of the question. If the information was followed through clearly the answer was a quite straightforward piece of arithmetic:

The payroll costs of an employee earning £20,000 per year will be £20,000+0.1×£20,000=£22,000. The number of revenue earning days per year is 260 (52x5) less 20 days (holidays) less 10 days (public holidays) less 10 days (sickness) less 15 days (training) less five days (unproductive), giving 200. Hence the cost of one day's work is £22,000/200=£110.

Some answers either did not know how many days there are in a year or used estimates such as 4 x 12x 5 – a calculation that is often used to make some allowances for non-productive time but to use this here would have been inappropriate. Some candidates deducted the social security contribution from the salary in order to get the total payroll cost, rather than adding it. Other candidates made the task more difficult than necessary by including far more data than was originally given, but where the assumptions were reasonable, they were not penalised for this.

b) Mango Software's financial year runs from 1 August to 31 July. On 1 August 2004 it purchased a substantial database server, costing £100,000. The server is expected to have a useful life of five years. The company uses straight line depreciation.

Calculate and explain the effect that the purchase will have on the balance sheets, the profit and loss accounts, and the cash flow statements for the following five years. (10 marks)

[Syllabus section 3]

Again this section was answered with a fair level of knowledge, and most candidates were able to show the depreciation of the asset over time. Only a few recognised the need for the depreciation to be added back into the cash flow as the money was not leaving the company. Also, some candidates selected a different method of depreciation for no good reason. Candidates often needed to be more precise, in terms of the amounts to be recorded, the dates, and how the item is to affect the accounts (e.g. to say that the depreciation will recorded in the profit & loss account is unclear). In brief the key points that needed to be recorded were:

The balance sheet at 31.7.05 will show an additional fixed asset of £80,000; at 31.7.06, £60,000; at 31.7.07, £40,000; and at 31.7.08, £20,000.

The profit and loss accounts for each year up to 2007/08 will show an expenditure item of £20,000 for depreciation on the database server.

The cashflow statement for the 2004/05 financial year will show a cash outflow of £100,000 arising from the purchase itself, together with a cash inflow of £20,000 resulting from adding back the

depreciation shown on the P&L, because the depreciation is a non-cash item of expenditure. Subsequent cashflow statements, up to an including the statement for 2007/08, will show just the inflow of £20,000 resulting from adding back the depreciation.

Question 5 (syllabus sections 2 and 9)

a) Explain briefly what is meant by a product line structure and outline its advantages, illustrating your answer with TWO examples from the IT industry. (10 marks)

[Syllabus section 2]

The majority of respondents demonstrated an understanding of product line structure and gave a good account of its advantages. Approximately 40% illustrated their understanding by providing TWO examples from the IT industry. A further 40% gave examples from industries other than the IT industry, while the remaining 20% didn't provide any examples at all.

In a product line structure, the organisation is split into divisions (or other units) each of which handles a specific product or group of related products. Such a structure has the effect of concentrating different types of expertise (4).
A company that relies on a group of closely related software products might produce a product line structure by defining its products as new releases of the software, training and consultancy. The advantages of structuring the company in this way is that specialised skills are needed for the delivery of each type of product – delivering a programme of training courses is very different from providing consultancy services – and so a product line structure allows similar skills to be grouped together (3).

An IT training company might structure itself into a division that provides courses based on Windows, a division that provides courses based on Linux, and a division that provides courses in generic skills for IT personnel, such as project management (3).

b) Describe three possible advantages of job specialisation and two possible disadvantages. (15 marks)

[Syllabus section 9]

This part of the question was very well answered by the majority of respondents. A small number of respondents wasted valuable time by explaining job enlargement and job rotation.

Three marks for each advantage/disadvantage.

Advantages

- because work is divided into specialised jobs, it potentially increases work efficiency;
- employees can master their tasks quickly because work cycles are short;
- eliminates time wasted changing from one task to another;
- training costs are reduced;
- job specialisation makes it easier to match people with specific aptitudes or skills to the jobs for which they are best suited.

Disadvantages

- loss of resilience, in that, if an employee is sick or leaves suddenly, it will be difficult to find someone to take over his/her job;
- loss of job satisfaction, because employees find the lack of variety boring;

- loss of flexibility, so that, if the need for one skill increases and the need for another declines, it is difficult to redeploy employees from one area to another.

Question 6 (syllabus sections 5 and 7)

a) Outline the main provisions of the Computer Misuse Act 1990 and explain why it was felt to be necessary. (10 marks)

[Syllabus section 5]

This part of the question was generally answered well, with students showing an understanding of the Act.

The Computer Misuse Act 1990 created three new criminal offences. The basic offence is deliberately gaining unauthorised access, or attempting to gain unauthorised access, to a computer system, or to parts of a system. This offence carries a penalty of a maximum of six months imprisonment or a fine of up to £5,000.

The second offence is committed when the basic offence is committed with the intent to commit a serious crime. It carries a penalty of up to five years imprisonment or an unlimited fine.

The third offence is committed if a person deliberately does anything that causes the unauthorised modification of the contents of any computer and could impair the operation of any computer, prevent or hinder access to any program or data held in any computer, or impair the operation of any such program or the reliability of any such data. The penalties are the same as for the second offence.

The Act was felt to be necessary because existing law, although well capable of dealing with fraud involving computers and cases covered by malicious damage, was unable to deal with the concept of stealing computer power or modifying data and programs.

b) Discuss how far internet service providers (ISPs) are responsible under UK law if their services are used to disseminate material that could be the subject of civil or criminal action, such as obscene or defamatory material. (15 marks)

[Syllabus section 7]

Students generally found this part more difficult in terms of how the roles of mere conduit, caching and hosting relate to an ISP's legal liability for defamatory or indecent material.

The Electronic Commerce (EC Directive) Regulations 2002 distinguish three roles that an ISP may play: mere conduit, caching, and hosting.

The role of mere conduit is that in which the ISP does no more than transmit data. Provided it is acting as a mere conduit, the regulations provide that an ISP is not be liable for damages or for any criminal sanction as a result of a transmission.

The caching role arises when the information is the subject of automatic, intermediate and temporary storage, for the sole purpose of increasing the efficiency of the transmission of the information to other recipients of the service upon their request. An ISP acting in the caching role is not liable for damages or for any criminal sanction as a result of a transmission, provided that it follows the normal practices of the industry and that it acts expeditiously to remove or to disable access to the information as soon as it learns of any actionable material.

Where an ISP stores information provided by its customers, it is acting in a hosting role. In this case, it is not liable for damage or criminal sanctions provided that: it did not know that anything unlawful was going on; when it found out that that something unlawful was going on, it acted

expeditiously to remove the information or to prevent access to it, and the customer was not acting under the authority or the control of the service provider.