

**THE BCS PROFESSIONAL EXAMINATIONS
BCS Level 5 Diploma in IT**

October 2007

EXAMINERS' REPORT

PROFESSIONAL ISSUES IN INFORMATION SYSTEMS PRACTICE

General Comments

The pass rate this sitting showed a further improvement and the percentage of candidates gaining marks of less than 30% fell from 30% to just under 25%. As in previous sittings, there was one large centre with a pass rate that was less than half the average. All other centres with enough candidates to be statistically significant had similar pass rates.

As usual, some candidates performed extremely well and showed a real and profound understanding of the material; as a result, they gained very high marks. Such candidates were to be found at all centres. Nevertheless, many candidates were clearly inadequately prepared for the examination and lacked the necessary basic knowledge.

Questions 2 and 4 were badly answered, largely because many candidates selected these questions despite their ignorance of the topics in one section of the question. Specifically, few candidates understood what is meant by *job evaluation* (question 2 part a) and few were familiar with the Regulation of Investigatory Powers Act (question 4 part a).

Question 1

A new company has been established to develop a technological innovation exploiting the next generation of Radio Frequency Identification (RFID) chips for automated distribution of goods in retail companies.

- a) The estimated initial cost of developing the technology is £1 million. The net income is initially anticipated to be £200,000 per annum rising by £100,000 per year. Develop a simple cash flow projection and calculate the payback period, ignoring the time value of money.

(5 marks)

Without doing any further calculations, explain how a *discounted* cash flow projection would differ from your simple projection and why it is generally preferred.

(4 marks)

Most candidates found prediction of the payback period by simple cash flow, as shown below, relatively straight-forward. However some candidates lost credit due to a lack of care or poor detail in drawing the chart or calculating the payback period. The discussion on discounted cash flow showed that candidates understood that it helped to address the effect of time. However, fewer candidates addressed the impact of doing this either in terms of the nature of additional calculations or the resultant change in the payback period.

[Syllabus section 1d]

year	1	2	3	4	5
expenditure	-£1,000,000				
income	+£200,000	+£300,000	+£400,000	+£500,000	+£600,000
Cash flow	(£800,000)	(£500,000)	(£100,000)	£400,000	£1,000,000

Payback 3.2 years

In a discounted cash flow projection the cash flows in years after the first would adjusted to reflect their present value, that is, the sum which if borrowed or lent today would produce that amount at the appropriate time in the future. This is to be preferred because it reflects the need to pay interest on money borrowed for investment purposes.

b) After five years the balance sheet shows:

	(£000's)	
Fixed Assets		250
Good Will		200
Current Assets		
Stock	50	
Debtors	100	
Cash	25	
		175
Current Liabilities		
Trade Creditors	40	
Tax	35	
		75
Net Current Assets		300
Total Assets less Current Liabilities		750
Capital and Reserves		
Share Capital – £1 ordinary shares	400	
Loan stock	150	
Profit and Loss Account	200	
		750

With reference to this example, explain the following terms and how they are calculated:

- i) good will
- ii) debtors
- iii) gearing
- iv) working capital.

(16 marks)

Most candidates were able to describe the 4 terms but often with a lack of precision or were not always able to provide valuations that were appropriate to the scenario given – simply repeating the number from the balance sheet was not sufficient.

[Syllabus section 1c]

Good will arises when a company is purchased for a price higher than the value of the net assets shown on its balance sheet. In such a case, the purchasing company presumably believes that the value of the purchased company's name or reputation and/or its IPR justify the higher price. The difference between the purchase price and the net asset value will appear under the heading 'good will' in the purchasing company's balance sheet. It will be treated as a fixed asset and written off in the usual way. Good will arises very frequently when software product companies are sold, since it is rare that software products are shown as assets on the balance sheet but their perceived value will be important in determining the price at which the company can be sold. The likely explanation for the good will item of £200,000 is that the company has acquired another company active in a similar area and paid £200,000 more for the company than for the book value of its assets.

[Syllabus section 1c]

Debtors owe money to the company. These are likely to be customers with outstanding invoices. These are counted as assets as it is monies due to be paid in for goods or services rendered. Valued equal to money owed, but bad debt is sometimes allowed for in the calculation.

Gearing: the relationship between loan capital and equity capital on the balance sheet (long term liabilities $\times 100 /$ (share capital+ reserves + long-term liabilities), so here it is $150 \times 100 / 750 = 20\%$. The loan capital comes from banks, venture capitalists, etc who receive an agreed rate of interest. High gearing indicates a high ratio of debt to equity capital and is considered undesirable by the shareholders and the lenders.

Working capital is the difference between current assets and current liabilities, that is, $175000 - 75000 = £100000$ in this case.

Question 2

- a) Job evaluation is often used for comparing the relative worth of jobs and then allocating jobs to specific grades. Describe TWO methods used to evaluate jobs. **(15 marks)**

[Syllabus section 1i]

Many candidates misunderstood the question (despite the very explicit wording) and described ways of evaluating an individual's performance, such as appraisal systems or MBO. Such answers gained no marks.

Job evaluation schemes may be analytical or non-analytical. Non-analytical schemes involve comparing whole jobs without considering the individual elements and skills that go to make up the job. There are a number of fairly simple non-analytical techniques in use. One technique that has been widely used in the public sector is known as job classification. Using this technique, the number of grades is decided first and descriptions of the characteristics of jobs in each grade are then produced.

Analytical job evaluation schemes assess each job on the basis of the different elements that are involved. Such elements might include financial responsibility, supervisory responsibility, degree of autonomy, decision making powers, IT skills, linguistic skills, and so on. Each of these elements is given a weight to reflect its importance relative to the others. Each job is then assessed for each of the elements on a scale, typically of 0 to 4, with the criteria for each level specified as objectively as possible.

Some candidates described techniques based, for example, on internal or external relativities. Others based their answer on the BCS industry structure model. Such answers were given credit to the extent that they addressed job evaluation rather than performance evaluation.

- b) To be registered, a company must have a constitution. The constitution consists of TWO documents, namely: *memorandum of association* and *articles of association*. Outline the content of EACH document. **(10 marks)**

[Syllabus section 1b]

This section was answered well by most candidates.

The memorandum of association contains the following:

- *Name of the company.*
- *The country in which its office will be located.*
- *The objects of the company.*
- *A liability clause.*
- *The company's authorised share capital and the number and nominal value of its shares.*
- *Declaration of association*

(5 marks)

The articles of association relate to such matters as:-

- *Number of directors.*
- *Power of directors.*
- *How directors are appointed and removed from office.*
- *What happens when new shares are to be issued.*
- *The process for modifying the articles of association*

(5 marks)

Question 3

- a) DigiPro Plc, a major UK facilities management company with more than 10,000 employees, carried out an employee survey five years ago to help find out why employees were leaving at twice the rate of the industry average. Subsequent exit interviews suggested that poor pay rates were the cause of the high employee turnover. The company increased its pay rates, but the high turnover rate failed to decline.
- The company undertook a deeper investigation of employee turnover patterns over the last twelve months and found several factors were involved. The investigation also found that pay levels had the weakest impact on employee turnover. Based on the above scenario that demonstrates the fallibility of exit interviews, describe THREE factors you think would have more influence on employee turnover and explain why.

(15 marks)

[Syllabus section 1i]

The majority of respondents answered this section well. Marks were lost for a number of reasons, the main three being;

Some candidates tried to answer the question by using Maslow's hierarchy of needs to demonstrate what motivates people.

Some candidates incorrectly answered the question by discussing job rotation, job enlargement and job enrichment.

Some candidates provided THREE factors, but didn't relate them to the scenario provided.

The following are three possible factors – marks were awarded for other suitable answers.

Lack of promotion. Facilities management has grown phenomenally over the past five to ten years. This growth has provided many opportunities for staff in this industry sector, opportunities they can't always obtain by staying with their current employer

Too long in the one job. Many staff don't like to stay in the one job for too long, particularly if they have outgrown the job and wish to learn new skills

The loss of a good manager. Managers were part of the high employee turnover. When a good manager left, his/her staff sought employment elsewhere as they felt their careers were not as well managed by the less experienced manager

- b) Explain the terms *reservation of title* and *reservation of function* as applied to the professions, giving examples of professions in the UK to which each applies.

(6 marks)

[Syllabus section 1a]

This part of the question was very well answered by about half of the respondents, with the other half not answering at all or appearing to guess.

Reservation of title means that only properly qualified persons can use the title. For example, only those who have the requisite qualifications and are registered with the Architects Registration Board are allowed to call themselves architects.

Reservation of function means that only suitably qualified people are allowed to carry out certain functions. For example the function of auditing public companies in England and Wales is reserved to members of the chartered and certified accountants institutions. (Note that reservation of function does not apply to doctors.)

- c) To what extent are these terms applicable to the engineering profession in the UK and in the USA.

(4 marks)

In the UK there is no reservation of function within engineering. Reservation of title applies only to specific titles such as Chartered Engineer or Incorporated Engineer; it does not apply to the title engineer used generically.

In the USA the situation depends on the state but, in general, both title and function are reserved to engineers registered within the state in which they seek to practise.

Question 4

- a) Explain the purposes for which, under the UK Regulation of Investigatory Powers Act 2000 and the associated regulations, organisations that provide computer and telephone services can monitor and record communications without the consent of the users of the service.

(16 marks)

[Syllabus section 1e, 1g]

Most candidates who attempted this question had no knowledge of the topic and produced random guesses that were rarely correct. A few candidates were able to produce the list of circumstances given below.

- 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 effective 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 holiday, in order to deal with any that relate to the business);*
- 8. to monitor (but not record) calls to confidential, counselling helplines run free of charge by the business, provided that users are able to remain anonymous if they so choose.*

- b) Explain the terms *mere conduit*, *caching* and *hosting* as they apply to the possible roles of internet service providers.

(9 marks)

[Syllabus section 1e 1g]

This section was generally well answered.

The role of mere conduit is that in which the ISP does no more than transmit data; in particular, the ISP does not initiate transmissions, does not select the receivers of the transmissions, and does not select or modify the data transmitted. It is compatible with the role of mere conduit for an ISP to store information temporarily, provided this is only done as part of the transmission process.

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 is acting in a hosting role when it stores information provided by its customers.

Question 5

- a) Outline the principles of the UK Data Protection Act 1998.

(12 marks)

[Syllabus section 1e]

This question was generally well answered but the examiners found it astonishing that a number of candidates taking this paper were apparently totally ignorant of the topic.

The principles of the UK Data Protection Act 1998:

- 1. Personal data has to be processed fairly and lawfully*
 - 2. Personal data shall only be retained for specified, lawful purposes, and shall not be used for purposes incompatible with the registered purpose.*
 - 3. Personal data shall be adequate, relevant and not excessive*
 - 4. Personal data shall be accurate and, where necessary, up to date.*
 - 5. Personal data shall not be held longer than is necessary for its registered purpose.*
 - 6. The data subject shall have access to relevant data.*
 - 7. Appropriate security measures must be taken to safeguard the data.*
 - 8. Personal data shall not be transferred to a country or territory outside the European Economic Area unless that country or territory has data protection legislation.*
- b) Assume that you are an IT security manager in a large UK based bank. You are investigating the case of an clerk within the bank who has installed a computer program on the company's accounts system which, whenever a customer opens a new account, sends the clerk an e-mail with the account details and then destroys the evidence that the e-mail has been sent. The clerk then sells these account details to a credit card company. Discuss the criminal offences that might be used to prosecute the clerk under the UK Computer Misuse Act 1990, and what penalties you might expect the clerk to receive in a UK court.

(13 marks)

[Syllabus section 1e]

Most candidates were able to apply the Computer Misuse Act to this scenario.

The criminal offences that might be used to charge the clerk under the UK Computer Misuse Act 1990 would be:

Unauthorised access to company's computer system, since the clerk may have gained unauthorised access to the company's accounts systems in order to install the program.

[3 marks]

Unauthorised modification of computer programs or data, since the clerk installed the computer program created the e-mails and deleted records of them from the log.

[4 marks]

The penalties that the clerk might expect to receive in court:

For unauthorised access to computer materials on summary conviction to imprisonment for a term not exceeding six months or to a fine or both.

[3 marks]

For unauthorised modification / deletion of computer materials on summary conviction to imprisonment for a term not exceeding six months or to a fine or both, on conviction on indictment, to imprisonment for a term not exceeding five years or to a fine or to both.

[3 marks]

Question 6

- a) Explain the difference between copyright and trademarks.

(10 marks)

[Syllabus section 1f]

This section was generally well answered, although some candidates failed to pick out the specific differences between the two.

Copyright is the right to make copies of, or perform, works in various categories, which include software, sound recordings, literary works, films, and so on. It comes into existence automatically and gives effectively worldwide protection against unauthorised copying.

A trademark is a mark or sign used to identify goods produced by, or sold by, a particular company. No one other than the owner of the trademark or someone authorised by him may use the trademark. Unlike copyright, a trademark must be registered to be effective (although in common law jurisdictions there is some protection through the tort of 'passing off'). Again unlike copyright, protection only applies in the jurisdictions in which the trademark is registered and it only applies to goods of a similar nature as those for which the trademark is registered. A trademark may itself also be protected by copyright.

- b) Discuss how a web-based UK company selling mobile telephone ring tones might potentially use copyright legislation to protect its business activities.

(15 marks)

[Syllabus section 1f]

Most candidates gave an adequate answer to this part of the question but few recognised the difference between copyright in the recording and copyright in the music.

The web-based company selling mobile telephone ring tones might potentially use copyright legislation to protect its business activities as follows (or appropriate alternatives):

Under the UK Copyright Designs and Patents Act 1998, the company could prevent others from:

- copying their mobile telephone ring tones;*
- issuing copies of the mobile telephone ring tones to the public;*
- broadcasting the mobile telephone ring tones or include them in a cable programme service;*
- performing or playing the mobile phone ring tones in public;*
- making an adaptation of the mobile telephone ring tones or doing any of the above in relation to an adaptation.*

However, the situation is potentially much more complicated than this. If the ring tone is a performance of a piece of music that is no longer in copyright, then copyright only protects the specific recording used to make the ring tone (although, there may be copyright in an arrangement). If the ring tone is a musical cliché, the same is true. It is only if the company owns the copyright in the music, that full protection is available; this will not often be the case.