

# THE BCS PROFESSIONAL EXAMINATION

## Diploma

April 2002

### EXAMINERS' REPORT

#### Professional Issues in Information Systems Practice

The pass rate on this module continues to improve as, presumably, candidates and teachers acquire a better understanding of what is expected. It was particularly pleasing to see a significant number of candidates, from all geographical areas, with marks in the 70s and 80s.

The commonest cause of low marks was candidates' inability to apply theoretical knowledge to specific scenarios. This is a cause for concern because there is no point in candidates acquiring theoretical knowledge in these areas if they are unable to apply it to the context in which they work.

#### Question 1 (Syllabus section 6)

- a) **The following are established ways of protecting intellectual property rights in software. Describe the purpose of each of these approaches and explain how each of them can be used to protect property rights in software.**
- i) **Copyright** (6 marks)
  - ii) **Patent** (6 marks)
  - iii) **Trade mark** (6 marks)

#### Answer Pointers

This question demanded an understanding of the main IPR law and how it applies to software. A number of very good answers were produced. The candidates were generally strong in reproducing the definitions of copyright, patent and trademark. Of these topics patents were least understood. The marks for each item were split between the definition and its use for protecting s/w. Unfortunately many candidates did not specifically answer the point about how these items relate to the protection of IPR in software / computing – reading the question is important as many lost easy marks on this section of the question. Below are examples of suitable points that could have been made in the answers – but many other relevant points were made by candidates on the detail of the law.

- i) Copyright exists automatically where original work is created by a qualifying person, copyright protects literary works. No copyright in ideas. It is used to protect every type of software; using software – accent to licensing someone's copyright; cannot reproduce or copy software.
- ii) Patents are available for inventions (products or processes) provided that they are new and involve an inventive step. Originally software considered an exclusion; now physical effects of software are patentable; restricted to single country.
- iii) A trademark may be registered under the Trade Marks Act 1994; shows ownership of the mark (eg name or symbol) not originality; can be used for stopping use in same kinds of goods or service. Can be used to protect item in

software class; if other uses similar name or symbol; can be used for software service as well as product

- b) **In a court case of North versus South, it was established that North produced a market leading global positioning system. The systems director of North left the company and established a new company, South, to develop a competitive product. The new product was produced quickly and bore a strong resemblance to the North product. North is considering taking South to court.**

**Discuss the case between North and South, showing what North has to show to prove that intellectual property has been breached.**

**(7 marks)**

#### Answer Pointers

Most candidates were able to identify the problem of confidentiality and that South could not simply copy the system, with many also sensibly discussing the role of the contract of employment in defining the particulars in any case. However, not many were able to discuss the problem of proving the case in court. Too many candidates relied on repeating material from part (a) instead of discussing the aspects of the case. A suitable answer showed that it is not straightforward to prove breach of IPR. Issues such as was it a copy or just a similar idea; how the design is protected as well as the code; the development procedures and documentation could be used by South to show it was on their own work. North needs to show a substantial part of system is the same. Form and style count not just exact code (so can be specification rather than code). Need to show evidence of development processes themselves to establish cost of original development to show it must be copied to have done it so quickly.

#### Question 2 (Syllabus section 2)

Overall, this question was not answered well by the majority of the candidates.

- a) **Boards of directors are answerable to the shareholders and to the law. Their responsibilities fall into two main categories, namely legal and domestic. Explain the legal responsibilities and the domestic responsibilities of the directors.**

**(13 marks)**

#### Answer Pointers

In the first part of this section, the majority of candidates failed to make reference to the Companies Act. This lost them marks as many legal responsibilities of directors fall within this Act. Most candidates obtained a pass in the second part of the section; however there were a number of candidates who failed to distinguish between legal and domestic responsibilities.

Legal responsibilities.

There are three main legal responsibilities:

1. To comply with the provisions of the Companies Act.
2. Through the Companies Act there is a liability on the directors to third parties and employees.
3. To ensure that all operations carried out by the company are within the law.

**(6 marks)**

Domestic responsibilities.

There are four main domestic responsibilities:

1. The board of directors act as trustees for the funds provided by the shareholders.
2. The board of directors must act entirely in the interests of its shareholders.
3. A director should refrain from joining in any discussion and vote, in relation to a topic in which he/she has a personal interest. Impartiality is of the essence.
4. Agree objectives and formulate policy for the organisation.

(7 marks)

**(b) Within a group wide company with a centralised headquarters, what are the main arguments for decentralisation and centralisation of IT activities?**

**(12 marks)**

Answer Pointers

In this section most candidates gave good answers in terms of where to locate the various functions, but many of them failed to describe the relationship between the research and development function on the one hand, and sales, marketing and customer support on the other. Some candidates gave an answer that was far too generic i.e. they wrote about locations, functions and products without making any reference to Syniad Software Plc and its locations, functions and products.

The following is a suggested list of points that need to be expanded on, but is by no means exhaustive.

Decentralisation:

- Provides resource allocation to the business management.
- Accountable to that part of the business for which the work is being done.
- IT activities are a lot more responsive to customer needs. (6 marks)

Centralisation:

- Hardware & software economies of scale.
- Core transaction processing remains in one location, as does the expertise to run the systems.
- Obtain synergies from integration. (6 marks)

### **Question 3 (Syllabus section 5)**

This question was answered in a reasonable manner. Most candidates were able to state the principles of the DPA 1998 and the CMA 1990. However, generally students were less able to apply the principles to a given scenario.

**a) Briefly describe the three criminal offences created by the Computer Misuse Act 1990, giving an example of each.**

**(8 marks)**

Answer Pointers

The three new criminal offences created by the Computer Misuse Act 1990 are as follows:

- Unauthorised access refers to knowingly trying to gain unauthorised access to a computer system, regardless of success. e.g. attempting to look at someone else's pay details. (3 marks)
- Unauthorised access with intent to commit another offence. This seeks to protect against unauthorised entry with the intention of committing a further criminal act e.g. fraud. (2 marks)

- Unauthorised modification of data or programs. For example the introduction of computer viruses into a computer system. Guilt is assessed upon the intention to disrupt or in some way impair the normal operation & processes of the computer system.

(3 marks)

- b) Explain whom the Data Protection Act 1998 is meant to protect, and what it is meant to protect against.**

**(7 marks)**

Answer Pointers

DPA 1998 is meant to protect the data subjects (living individuals about whom personal data is held). DPA 1998 is meant to protect against misuse of personal data by organisations.

- c) An employee in a retail company alters the repayment records of several customers on the computerised repayments system, so that the customers repay less than they should. Discuss how the Data Protection Act 1998 and the Computer Misuse Act 1990 apply to this scenario.**

**(10 marks)**

Answer Pointers

Under the Data Protection Act 1998 adequate security may not have been provided by the retail company for the personal data held. (3 marks)

Under the Computer Misuse Act 1990 there has been unauthorised modification of repayment data (3 marks)

Under the Computer Misuse Act 1990 there has been unauthorised access with intent to commit a further criminal act. However, it would need to be established whether the employee had authorisation to access the repayments system.

(4 marks)

#### **Question 4 (Syllabus section 3)**

This question was very well answered, particularly section (a).

- a) Explain the meaning of the terms fixed assets and current assets, illustrating your explanation with suitable examples. (8 marks)**

Answer Pointers

A fixed asset is something that contributes to the capacity of the company to do its business. Typical examples are premises and equipment but software can also be a fixed asset. Current assets are things that have value and will be bought or produced and sold in the normal course of the company's business. Raw materials, stocks of bought-in components and stocks of finished goods are current assets. Less obvious examples are debts and work in progress, i.e., work that has been carried out on a contract but not yet paid for by the customer.

**b) Describe how the two types of asset are valued for balance sheet purposes, using as an example the following assets owned by a company that writes and sells software packages:**

- a stock of 1000 CD-ROMs containing version 1 of a package, version 2 of which is to appear shortly. The company paid £1,000 to have the CD-ROMs prepared and has been selling them at £100 per copy;
- an uninterruptible power supply costing £15,000 for the computer room housing the main servers.

**(17 marks)**

#### Answer Pointers

In this section most candidates identified the imminent release of version 2 would impact on the sales of version 1 and they correctly identified stock as a current asset. There were major variations between candidates as to the net realisable value of version 1 - some were credible, some were not. The majority of candidates identified the UPS as a fixed asset, but there were a number of candidates who didn't carry out depreciation and lost marks as a result. The following shows what was expected.

Current assets are valued at the lower cost price and net realisable value.

**(2 marks)**

The cost of the stock of user manuals was £1,000. The net realisable value of the stock is affected by the fact that version 2 of the package is coming out shortly. We shall probably not sell more than 20 of the remaining CD-ROMS, to yield £2,000. The net realisable value of the stock is therefore more than its cost. The valuation is therefore its cost, i.e., £1,000.

**(5 marks)**

The cost of acquiring a fixed asset is spread over its useful economic life. This is done by reducing the value of the asset each year by an amount called the depreciation, until the value reaches zero at the end of its useful economic life. The original cost is not charged to the profit and loss account but, each year, the depreciation is charged to it. There are several ways in which the depreciation can be calculated. The commonest (and simplest) is straight line depreciation. Using this method, if the useful economic life is N years, the depreciation in each year is one N<sup>th</sup> of original cost.

**(5 marks)**

The UPS is clearly a fixed asset and its useful economic life is perhaps five years. The depreciation in each year is therefore  $\frac{£15,000}{5} = £3,000$ . Its value at the end of the first year is therefore £12,000, at the end of the second year, £9,000, and so on, until its value at the end of the fifth year is zero.

**(5 marks)**

#### **Question 5 (Syllabus section 8)**

Overall, this question should have been answered a lot better than it was.

**a) Birchall (1975) states that “job enrichment is aimed at increasing the worker’s involvement in the organisation and/or the job”. In the case of a computer programmer having his or her job enriched by including team leader responsibilities, list five issues that management needs to consider?**

**(5 marks)**

## Answer Pointers

This section was answered well by the majority of candidates. The following is a suggested list of points, but is by no means exhaustive.

- Training
- Office space
- Motivation
- Succession planning
- Effects on team members
- Costs associated with the above and the need to weigh them against expected benefits

- b) The project team structure lends itself to job rotation, insofar as project team members move between different projects and hence different tasks. What are the advantages of such a structure to project team members and management?**

**(10 marks)**

## Answer Pointers

This section was answered well in terms of points raised. However, some candidates failed to distinguish between the advantages to project team members and the advantages to management and this resulted in the loss of marks. The following is a suggested list of points that need to be expanded on, but is by no means exhaustive.

Project team members:

- Variety
- Updating skills and knowledge
- Exposure to many aspects of the business
- Increased motivation

(5 marks)

Management:

- More flexible workforce
- Increased knowledge among team members, hence less dependency on key personnel
- Requires little restructuring of work
- Less need for formal and expensive training

(5 marks)

- c) MegaBuys is a large retailing company with a small IT department. It is proposing to carry out a job evaluation programme and is concerned about the way that salaries in the IT department should be determined following completion of this programme. Discuss the possible approaches to this issue and indicate the one you consider is most appropriate.**

**(10 marks)**

## Answer Pointers

This section was poorly answered. Many candidates described an appraisal approach while many others described a Management by Objectives approach – descriptions of either approaches was not sought. The four possible approaches sought were Internal Relativities, Differentials, External Relativities and External Identification. There were very few candidates who identified all four, there were a number of candidates who identified External Relativities as the most appropriate.

### Question 6 (Syllabus section 9)

This question was generally answered well by students. However, students appeared unsure as to how Gantt and Pert charts are used together.

6. You are a project manager of a development project to develop a new production control system for a large manufacturing company. You are required to produce a time estimate for developing the new production control system. You have identified the following activities in the development project that need to be undertaken:

Production planning sub-system development	4 weeks
Production planning sub-system testing	5 weeks
Material requirements planning sub-system development	6 weeks
Material requirements planning sub-system testing	7 weeks
Statistical process control sub-system development	5 weeks
Statistical process control sub-system testing	6 weeks
System testing	4 weeks
Volume testing	2 weeks

The system will operate on a Local Area Network connecting 15 personal computers. The PCs and LAN hardware will need to be ordered at least five weeks before they are needed.

The hardware is required to enable system testing to be performed but is not required for sub-system testing. The volume testing can only be started after system testing is complete. The LAN installation can be carried out independently of development activities and each of the three sub-systems can be developed independently.

- a) Draw an activity network for the above scenario.

(11 marks)

Answer Pointers

See below. Note the need to ensure that all the activities are included on the Pert chart and that the dependencies are correct.

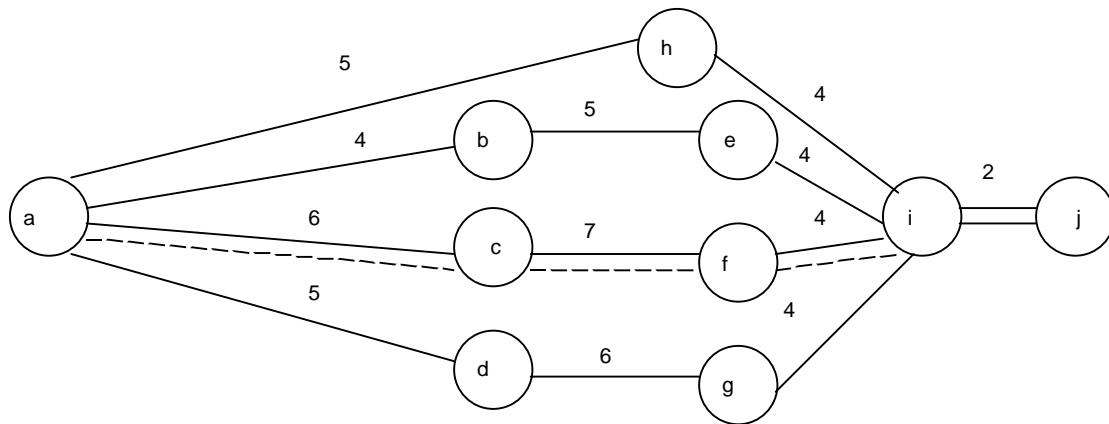
- b) Explain what is meant by the term critical path and show the critical path on the above activity network.

(4 marks)

Answer Pointers

The critical path is shown on the diagram by the dashed line.

Critical path is the longest path in the activity network which yields the shortest time in which the project can be completed.



- a = P.C.s and LAN hardware ordered, subsystem modules started
- b = Production planning sub-system developed
- c = Material requirements planning sub-system developed
- d = Statistical process control sub-system developed
- e = Production planning sub-system tested
- f = Material requirements planning sub-system tested
- g = Statistical process control sub-system tested
- h = P.C.s and LAN hardware installed
- i = system testing completed
- j = volume testing complete

----- = critical path

**c) Explain the purpose of a Gantt chart. Draw a Gantt chart for this project and outline how it could be used in conjunction with the activity network to assist in managing the project.**

**(6 marks)**

Answer Pointers

A Gantt chart shows the activities to be undertaken over a given timescale. It also shows the work completed and the work remaining. A Pert chart shows those activities that can be done in parallel, and the Gantt chart can show the effort used and the effort remaining for each of the activities in order to aid project monitoring.