THE BCS PROFESSIONAL EXAMINATION
Professional Issues in Information Systems Practice

April 2001

EXAMINER'S REPORT

The overall pass rate for the paper was 54%. The results in 2000 showed a very wide variation between centres. This year the variation was much reduced. Candidates appeared to be better prepared than in 2000. Areas of questions that enable the repetition of learnt bookwork were generally well done, but the sections that required candidates to apply or evaluate this knowledge showed an underlying weakness in many candidates' understanding.

QUESTION ONE

1. (a) The Code of Conduct of the British Computer Society is divided into four main sections. Explain what these sections are and describe briefly the issues addressed by each section.

(16 marks)

Candidates were expected to outline the main clauses in the Code of Conduct, as shown below. Credit was awarded for depth of understanding of the code rather then ability to state the clauses perfectly or to put them in the right section. Most candidates were able to identify a number of the areas and describe the issues covered in the Code of Conduct.

The public interest: this describes members' 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.

(4)

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.

(4)

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.

(4)

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.

(4)

(b) You have recently taken over responsibility for the maintenance of your company's accounting suite. While familiarising yourself with it, you realise that the modules that handle sales contain a systematic error that will lead to the company paying less taxes than it should. When you point this out to your manager, he tells you to leave it as it is because that is the way the company wants it.

Which clauses in the Code of Conduct are relevant to this situation and how might the Code affect what you do?

(9 marks)

The candidate was expected to be able to relate the Code stated in part (a) to the scenario stated in the question. It was important to be able to discuss the issues, in particular the problem of conflict resulting from different clauses. Unfortunately many candidates wrote limited answers that simply described the problems facing the individual rather than how the Code helped to direct their actions. A suitable answer would be:

The two most obviously relevant clauses are:

(3) That members should ensure that they have knowledge and understanding of relevant legislation (which is clearly the case here) and should comply with such requirements; and

(8) Members shall not disclose ……confidential information acquired in the course of professional practice.

Clause (8) inhibits you from going directly to the Inland Revenue but clause (3) requires you not to go along with what is being done.

Clause (5) says that if your professional judgement is overruled, you should make sure your employer is formally informed; this has, at least partly been done.

Clause (9) says members should seek to avoid being put in this sort of position so, presumably, it encourages you to find another job.

(The Code was written before the Public Interest and Disclosure Act 1998.)

Three marks for each of any three of the above; clause references were not required.

QUESTION 2

(a) Describe the changes that have taken place in the structure of the UK engineering profession over the last 50 years and discuss briefly the factors that caused these changes.

(15 marks)

It was important for candidates to state how the engineering profession structure had changed and not just how the profession is structured today. Many candidates discussed the changes in technology rather than the professional bodies, this was not acceptable. A suitable answer would be:

Fifty years ago there were a large number of independent professional engineering institutions, who talked to each other very little. The technological revolution that began in the 1950s showed the need for interdisciplinary engineering and the status of engineering in the UK was felt to be low. These two factors led to the setting up of the Engineering Institutions Joint Council in 1962, which acquired a Royal Charter and became the Council of Engineering Institutions in 1963.

(5 marks)

The CEI set up the present three tiers of engineering qualifications and the registration system that supports it. It did not, however, succeed in making employers or the general public respect the qualifications.

(3 marks)

In 1977, the Labour government set up a commission of enquiry into the engineering profession under Sir Monty Finniston. This recommended statutory registration of engineers but not statutory licensing of engineers. It also recommended the introduction of BEng and MEng degrees. While the report was accepted, its recommendations were not acted upon in the original form. It led to the formation of the Engineering Council but as a chartered body rather than a statutory body.

(5 marks)

Although the Engineering Council introduced such things as the uniform system of accreditation of engineering courses, the profession remained fragmented. This led to the Fairclough working group in 1992, the results of which are still coming on stream but which is aiming to unify the profession.

(2 marks)

(b) Explain the role and characteristics of the BCS as a professional body.
(10 marks)

The role and characteristics of the BCS were generally well understood, but sometimes there was confusion between part a) and b) of the question, with aspects of b) being put in the answer to a). Candidates were expected to outline the key responsibilities under the Royal Charter to describe the role of the BCS such as:
advance knowledge in the area; uphold professional competence; set related education standards; define standards for professional conduct through code of conduct & practice; advise the UK Government on legislation issues

(5 marks)

And to describe the characteristics of the Society and its structure, such as:
Began in 1957 …Royal Charter 1984; Governed by a Council; Specialist groups and Branches; Professional / non-professional membership

(5 marks)

QUESTION 3

3. (a) Explain the ideas of job rotation, job enlargement and job enrichment, illustrating your explanation by showing how they might be applied to the following scenario.

Peter, Paul and Mary work in the suppliers' invoices section of the accounting department of a university. Peter's job is to receive incoming invoices from suppliers, enter them into the invoice register, match them to purchase orders, and send them to the relevant department for confirmation that the goods had been received. Paul's job is to receive the invoices back from departments, mark them in the invoice register as approved by the department and code them according to the nature of the expense. The invoices are then passed to Mary who checks that everything is in order, marks them in the

invoice register as passed for payment, and passes them to the payments section.

(15 marks)

Almost every candidate did this question, and overall the basic description of the approaches were reproduced to a good level. The application of the ideas to the scenario sometimes showed a lack of understanding.

Job rotation means moving people systematically and regularly from job to job. In the scenario, this might mean that Peter, Paul and Mary do their present jobs for a month, then Peter moves to Paul's, Paul to Mary's and Mary to Peter's. After another month they move round again and, after another they are back to their first job. This process is repeated indefinitely. It has the advantage of giving Peter, Paul and Mary some variety and making the section more resilient when one of them is absent through sickness or holiday.

(5 marks)

Job enlargement means giving people jobs that involve more tasks. One way of doing this here would be to make each of Peter, Paul and Mary responsible for all aspects of handling suppliers' invoices for a group of departments. This again gives them more variety and, by enabling them to get to know staff in the departments they deal with, is likely to lead to greater pride and conscientiousness in their work.

(5 marks)

Job enrichment means giving people more satisfying by giving more complicated tasks. There is no mention in the scenario about handling queries. It may well be that this is handled by their superior but that they could be given training to enable them to handle simpler cases themselves.

(5 marks)

(b) What are the main provisions of the Computer Misuse Act 1990 and why was the Act thought to be necessary?

(10 marks)

The Act introduced three offences: intentional unauthorised access to programs or data held in a computer; intentional unauthorised access to programs or data in a computer with intent to commit, or facilitate the commission of, a serious crime; and intentional unauthorised modification of the contents of a computer.

(2 marks each)

The Act was thought necessary because there was no criminal offence that could be used for prosecuting people who engaged in these activities. The problem was that, because of their intangible nature, theft of data or theft of processor cycles did not fall within the normal legal definition of theft.

(4 marks)

QUESTION 4

4. (a) You and a few friends are thinking of going into business together to offer software development and system integration services to small businesses.

Explain why it would be wise (or, alternatively, why you think it would not be wise) to form yourselves into a limited company.

(15 marks)

It was necessary for candidates to explain in detail why (or why not) they should form a limited company. The link to the IT industry was a relatively minor aspect of the question, so candidates who answered about why a company going into this market was wise did not score very well. The three basic areas for discussion were:

limited liability;
convenience of transferring parts of the ownership using shares;
legal existence makes many transactions more convenient and gives greater prestige.

Up to five marks for each area. The level of explanation needed to show a strong understanding to achieve all 5 marks. In particular, it was helpful if candidates showed WHY it is important and HOW it was achieved.

(b) Your company is about to spend £25,000 on a powerful database server that is expected to be in use for the next five years. Explain the different ways in which it will affect the company accounts over that period.

(10 marks)

The answer required the candidate to explain how to account for the purchase and the changes to the company accounts over the next five years. So explanations of how good a server was, how a server would save money or how an accounts system could be run on the server did not answer the question. A suitable answer would be:

In the year of purchase, there is a £25,000 debit item in the cash flow statement and the item appears as an asset in the balance sheet.

(3)

Each year for the next five years, there will be depreciation item of £5,000 appearing in the profit and loss account and the value of the asset shown in the balance sheet will decline by £5,000 (assuming straight line depreciation is used).

(4)

Finally the item will disappear from the balance sheet but, if it is sold for scrap, the money received will appear on the P&L (technically as an extraordinary item but this has now been abandoned in the UK).

(3)

QUESTION 5

a) You have been put in charge of the roll-out of a new PC system across your organisation. The roll-out involves the installation of the software and training of the affected staff at six sites across Europe. The training takes one day per site. The installation depends upon the size of the site, two sites will take three

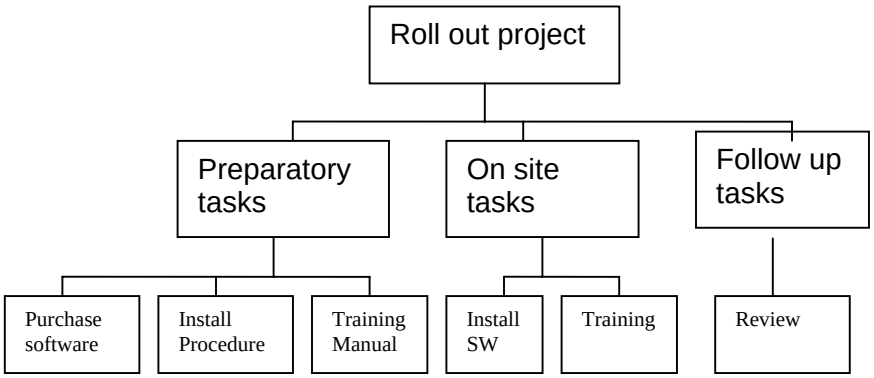
days and the other four will take two days. The training for each site cannot occur until the installation is complete at that site.

Prior to the roll-out a set of installation procedures and training documentation need to be produced. The installation procedures will take 10 days to write. The training documentation will take just 5 days. Before any of the work commences the software needs to be purchased, but that will take just 1 day. At the end of the roll-out, a review report is to be written this is anticipated to take 2 days.

you are expected to produce a plan of the roll-out project. So you should produce:

i) A work-breakdown structure (3 marks)

Very few answers showed understanding of work breakdown. Most candidates listed the tasks from the description of the project. Some credit was given for this, but the idea of a work breakdown structure is to help the project manager identify and organise the tasks in logical groups. So one example of how this could have been done is by type of task. Dependencies and timing are not important at this stage. Each site could be listed individually.



ii) **An activity network diagram and calculate the critical path.(6 marks)**

Generally this section of the question was done fairly well. A lack of detail and appropriate use of the techniques hampered the quality of some answers. Candidates could use either on the node or arrow diagrams to develop the activity network. The tasks should be clearly identified and shown with the logical dependencies (2 marks). This should have been clear from the description, but where candidates were clear about other assumptions these were allowed (for instance some people bundled installations into 1 task and others split into separate tasks both of these were allowed). The calculations of earliest start times, float, etc based on the dependencies should be shown (2 marks). The identification of the critical path(s) [purchase / procedures / long installs / training

/ review] and the length of the CP [17 days based on standard assumptions] (2 marks)

iii) A Gantt chart (6 marks)

A Gantt (bar) chart of the tasks by time should have been drawn. The marks were split for the understanding of how Gantt charts should be constructed, i.e. tasks listed on left, length represented by a line /bar, time on bottom axis (3 marks), and how well the candidate had constructed this one (3 marks), i.e. from the network diagram did the early start times / length / task order match the Gantt chart.

b) Following the production of the plan in part a), you are informed that there are some constraints in the allocation of people to the tasks. Two people, Alan and Beena, have been allocated to the roll-out. Only Beena has the skills to produce the installation procedures and training documentation, and the project review will require both Alan and Beena to work on the task together. Using this information show the impact on the roll-out plan.
(5 marks)

This part of the question was done poorly or not attempted by many candidates. In the original plan it is possible to show the 6 sites all being installed in parallel (on the assumption there were 6 people to do it). The limitations in this statement show that this is not possible. The preparation activities would need to be done by Beena. The implication is that the dependencies are effectively different as a result of the resource constraint and increase the critical path to 28 days. [3 marks]

2 additional marks for showing this on the plans [given time full redraw of the plans was not required, but either reuse of the original or brief sketch was allowed]

QUESTION 6

Bell and Sons are a specialist food wholesaler. They purchase products in bulk from producers around the world and sell to local shops across the country. There stock control is currently done manually, but they have found as the company has grown that more problems have occurred with stock-outs and food items going beyond their sell-by date.

To solve this problem the company management is investigating the two software options: a general stock control package (StockIT) and a specialist food stock control package (FoodStore). StockIT could be installed on the organisation's existing file server and does not require specialist customisation, so it is cheaper than FoodStore to install. However, FoodStore provides a better match to the organisation's requirements and therefore is expected to deliver greater benefit. The anticipated costs and benefits are shown in Table 1 below. The company is borrowing the money to finance the purchase of the software. The cost of capital is 20%. You should assume annual costs and benefits commence the year after the installation.

	StockIT	**FoodStock**

Installation Costs	**£2,000**	**£3,000**
Purchase price	**-**	**£2,000**
Consultancy costs	**-**	**£2,000**
Additional hardware	**£2,000**	**£3,000**
Company time		
Annual costs	**£250**	**£500**
Licence/maintenance fee		
Additional manual processing costs	**£750**	**-**
Annual Benefits		
Additional profit from sales from avoiding stock-outs	**£2000**	**£2,500**
Reduced cost of food wasted due to out of date	**-**	**£2,000**

Table 1. Anticipated costs and benefits of new software

Perform the following types of cost-benefit analysis to show which package Bell and Sons should buy.

There were surprisingly few attempts at this relatively simple question. Some who answered the question achieved very high marks. However, many also clearly did not understand the approaches at all.

a) Payback analysis to show the length of the payback period (8 marks)

Payback = installation cost / annual benefit

StockIT Net annual benefit = £1000; installation cost = 4000
Pay back = 4000/ 1000 = 4 years (4)

FoodStore 10000 /4000 = 2.5 years (4)

b) Simple return-on-investment to show the average rate of return (8 marks)

Simple ROI = annual net benefit / investment
StockIT = 1000/4000 = 0.25 (4)
FoodStore = 4000 / 10000 = 0.4 (4)

c) Net present value from the discounted cash flow over the four years after implementation (9 marks)

StockIT	YEAR	0	1	2	3	4
Cash inflow		0	2	2	2	2
Outflow		-4	1	1	1	1
Net cash flow		-4	1	1	1	1
Discounted Cash flow (assuming 20%)		-4	0.8	0.7	0.6	0.5

NPV –1.4

FoodStore	YEAR	0	1	2	3	4
Cash inflow		0	4.5	4.5	4.5	4.5
Outflow		-10	0.5	0.5	0.5	0.5
Net cash flow		-10	4	4	4	4
Discounted Cash flow (assuming 20%)		-10	3.3	2.8	2.3	1.9

NPV 0.3
(8 marks – 2 for correct process, 2 x 3 marks for each NPV calculation)

On all counts Food Store comes out best (but NPV would be better for StockIT over shorter period) (1 mark)