General

The pass rate, although better than in October 2004, was disappointing. It was noticeable that the majority of the candidates who failed did so by a substantial margin; very few of them could be regarded as falling within the borderline region. Furthermore, they seemed to score badly simply through lack of knowledge rather than through the inability to apply the knowledge. A second cause of low marks, however, was the failure to address the question as posed. See, for example, questions 3(b), 5(c), 6(b).

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.

The pass rates varied markedly from centre to centre. The best centre was an overseas one.

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

Question 1

1. **EITHER (new syllabus)**
1. *a)* You are a systems designer working for a large UK bank. You have been asked to produce a design for a new style of cash dispenser (ATM) that will replace the bank's existing cash dispensers.

   Explain how the UK Disability Discrimination Act 1995 might apply to your work. **(5 marks)**

   What considerations should be taken into account in designing a cash dispenser that is accessible to disabled users? **(10 marks)**

New syllabus section 5

Candidates generally answered this part of the question reasonably well.

Under the UK Disability Discrimination Act 1995 it is unlawful for a provider of services to discriminate against a disabled person by failing to provide facilities for the disabled to use a service that is offered to the public, to the extent that it is reasonable to provide such facilities.
(5 marks)

Consideration needs to be given to the needs of those with impaired vision, those who are wheelchair bound, those with limited hand functions, (and possibly those with hearing problems if any use is made of sound). This might mean a display with large characters and a keyboard with large buttons (possibly with Braille symbols on them). For those confined to a wheelchair, it is probably more the physical siting of the dispenser rather than its design that is important.

It is more difficult to provide for the needs of those who are completely blind. If synthetic speech is used as an alternative to the display, then privacy will be compromised. Headphones could be provided but might cause other problems. **(10 marks)**

b) Explain the roles *mere conduit*, *caching*, and *hosting* that an internet service provider may play according to the Electronic Commerce (EC Directive) Regulations 2002. Why are these distinct roles identified? **(10 marks)**

New syllabus section 7

Few candidates seemed to be familiar with this aspect of the regulations.

An ISP acts as a mere conduit when it does no more than transmit data. In particular, it does not initiate transmission, it does not select the destination of the data, and it does not modify the data. The caching role occurs when the information is the subject of automatic, temporary and intermediate storage for the sole purpose of improving the efficiency of the transmission of the information to other recipients of the service on their request. When an ISP stores information provided by its customers, it is acting in a hosting role.

These distinct roles are identified because they correspond to different levels of liability for the information on the part of the ISP.

Question 1 OR (old syllabus)

1. *a)* Using examples, explain the project management techniques that could be used to:
  i) record the activities required for a given IT project and how they are broken down;

  iii) record the dependencies between the activities required for a given IT project, and how such relationships affect the overall timescale of a project;

  iii) record the schedule of activities for an IT project and the staff resources required to undertake such activities. **(15 marks)**

Old Syllabus section 9

This part of the question was answered reasonably well by most of the candidates who attempted.

The following (or appropriate alternatives) would be expected:

i) Work breakdown structures can be represented by a hierarchical breakdown of the activities required in an IT project. Alternatively a Gantt chart can provide a breakdown of the phases, stages and activities required in an IT project. **(5 marks)**
ii) A Pert chart (or network activity diagram) represents a structure which depicts the duration of the activities and the dependencies between the activities required in an IT project. The critical path through a Pert chart shows the longest path through the chart, which determines the shortest overall timescale for the project. **(5 marks)**
iii) A Gantt chart records the schedule of activities for an IT project on a segmented time frame basis. A Gantt chart can also be used to allocate staff and other resources for each of the activities shown. **(5 marks)**

  b) Explain how the use of structured development methods can assist in the application of the techniques you have identified in part *a).* **(10 marks)**

This part of the question was answered poorly, perhaps because it expected candidates to look back to knowledge they had acquired while doing the Certificate.

Structured development methods identify at least the products of the development process and thus provide a work breakdown structure. The more comprehensive methods such as SSADM

also provide a breakdown into phases, stages and activities. Use of the same structured development method over a number of project means that the organisation gains an understanding of the relationships between the resources needed for the various phases of the project, which assists in estimating the resources required for each phase.

Question 2

2. Gameplay is a small computer games company started by a group of ten university computing graduates. Gameplay has devised a company logo that consists of the letters GP in bright red, on a pale blue circular background. Gameplay has just developed its first computer game, a science fiction based game entitled "sonic attack".

a) Discuss how Gameplay could protect its company logo from misuse by other companies or individuals. **(9 marks)**

Syllabus section 6

Gameplay could register its company logo as a trademark under the UK Trademarks Act 1994, since it is a sign capable of being represented graphically which can distinguish goods or services provided by Gameplay from other companies. It would need to be established that the Gameplay logo is not identical with or similar to an earlier trademark. **(3 marks)**

Registration in the UK only protects the logo in the UK and appropriate registrations in pther countries 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. Nevertheless, registration is simpler and more reliable. **(3 marks)**

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 authorisation. **(3 marks)**

b) Outline what protection copyright would give the computer game developed by Gameplay. **(12 marks)**

- 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 of Gameplay;
- making an adaptation of the game;
- doing any of the above in relation to a substantial part of the computer game.

(2 marks per point up to 6) **(6 marks)**

Copyright, however, provides only very limited protection against individuals who infringe it purely for their own use. Each individual must be proceeded against individually and damages in each case will be limited to the loss of revenue (plus costs). It gives much stronger protection against infringement for commercial purposes. This is a criminal offence so that criminal action can be taken against offenders, as well as action for damages.

(6 marks)

c) Explain what a patent is in the context of computer hardware. **(4 marks)**

A patent is the right granted by government to an inventor for a limited period to stop others from making, using or selling an invention (for example a new type of computer hardware) without the permission of the inventor. The right is absolute, that is, it does not depend on whether copying is involved.

Candidates, in general, seemed well aware of the existence of the relevant legal concepts but many of them repeated textbook definitions with little evidence of understanding.

Question 3

3. *a)* With respect to the UK computing profession:

   i) describe the situation regarding the licensing of software engineers;

   ii) identify the principal computer-related professional bodies and describe their relationship to each other and to other international bodies;

   iii) describe how computing-related university courses are accredited;

   iv) explain how continuous professional development is organised. **(16 marks)**

Syllabus section 1

Candidates gave moderate but not good answers in most cases. Candidates need to demonstrate a level of understanding in their answers that is more detailed. Some candidates simply tried to regurgitate a pre-prepared answer about the history of the Engineering Council/BCS, professionalism in software, etc. Candidates need to be able to adapt their knowledge to the specific question. The type of answers required were:

i) There is no licensing of software engineers in the UK, only membership/chartership, which allows them to practice across Europe. The Finniston enquiry in 1977 suggested the statutory registration of engineers but this was not adopted in law

ii) The BCS and the IEE are the main bodies in this area. Both are members of the Engineering Council. They collaborate on a variety of matters, including the publication of IEE Proceedings – Software. Each has links to similar bodies in other countries and to international groupings such as CEPIS and IFIP.

iii) Accreditation is carried out directly by the BCS and/or the IEE within the guidelines (formerly SARTOR, now UKSPEC) laid down by the Engineering Council. The institution makes a written submission describing the content of the course(s), the facilities available to students, its QA procedures and other matters. This is followed by visit from a panel from one or other (or both) of the professional bodies, in which particular attention is paid to what students on the course have to say.

iv) Individual professionals are expected to organize, and keep track of, their own CPD. Until the end of 2004 this was based on record cards and a log book but is now computer based. The BCS and IEE organise branch meetings, specialist groups, and so on, which provide opportunities for individuals to gain CPD credit.

   b) Using THREE examples, discuss why the roles and responsibilities of the BCS are important for non-professionals, whether practising computer specialists or not. **(9 marks)**

Some candidates answered this section very well, but many confused the role and responsibilities of the BCS with those of a member (i.e. as defined in the Code of Conduct). Candidates were expected to identify the role or responsibility, explain the role perhaps via an example, and show its application to non-professionals For example:

- disseminating knowledge and good practice in the field, e.g. involvement in ECDL, aimed at IT users;

- setting IT-related education standards, e.g. accreditation of university courses, which helps to maintain standards for all students, whether members or not;

- defining standards for professional conduct, e.g. code of conduct, which would have an impact on the clients of a professional contractor;

- advising UK Government, e.g. on data protection legislation, which is protecting the whole society.

Question 4

4. Idyllic Solutions is a service company providing mass printing facilities for businesses. The directors of Idyllic are currently considering two alternative investment projects. Both projects are concerned with the purchase of new high speed computerised printers. The following data is available for each project:

	Project 1 (£)	Project 2 (£)
Cost (immediate outlay)	30,000	15,000
Expected annual net benefit (loss)		
Year 1	15,000	12,000
Year 2	15,000	8,000
Year 3	15,000	(1,000)

The company has estimated that the cost of capital is 10 per cent and employs the straight-line method of depreciation for all assets when calculating net profit. The company has sufficient funds to meet the capital expenditure requirements.

a) For each project, calculate:
   i) the net present value
   ii) the payback period   **(8 marks)**

Syllabus section 4

Candidates varied significantly in their ability to answer this question. The second project confused some candidates, but many simply did not know how to develop a discounted cash flow. Many seemed not to realise that 10% discount factors for successive years are easily calculated by repeatedly dividing by 1.1, a process for which a calculator should not be necessary. Rounding to make the arithmetic easier was allowed so long as the process carried out correctly.

Project 1

	0	1	2	3
Capital cost	(30)			
Net profit (loss)		15	15	15
Net Cash flow	(30)	15	15	15
10% discount factor	1.000	0.909	0.826	0.751
Present value	(30)	13.64	12.40	11.27
Net present value	7.31			

Payback = 2 years 5 months [assuming flat rate of cash flow within the year]

Project 2

	0	1	2	3
Capital cost	(15)			
Net profit (loss)		12	8	(1)
Net Cash flow	(15)	12	8	(1)
10% discount factor	1.000	0.909	0.826	0.751
Present value	(15)	10..90	6.61	(0.75)
Net present value	0.76			

As the benefits are being discounted then the easiest way to calculate the payback period is by using the cash flows above. Using a simple payback equation did not make sense for project 2 particularly.

Payback = 1 year 10 months [assuming flat rate of cash flow within the year]

b) i) Explain which, if any, of the two projects the company should choose.
   ii) State which of the two methods of investment appraisal is most appropriate, giving two
        reasons for your choice. **(8 marks)**

i) assuming maximum profit is the objective then Project 1, as the NPV is higher.

ii) NPV because: timing of cash flow taken into account; opportunity costs/cost of money accounted for; fits with wealth generation objective of most companies.

c) Explain how the following aspects of the selected project would affect the company accounts:
   i) the initial capital outlay
   ii) the depreciation
   iii) the annual benefit/loss **(9 marks)**

Most candidates knew about the accounting of the capital outlay and the depreciation, fewer recalled the approach to benefit /loss.

   i) The capital outlay would be a recorded as a **fixed asset** in the **balance sheet**, and as cash out item on the cashflow statement.

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ii) The depreciation is **calculated by** initial cost – residual/number of years; this amount is **netted off the balance sheet value** of the fixed asset; and entered into the **profit and loss account.**

iii) Benefit/loss would be entered in the **P&L account; Cash account** will increase/decrease; and the **cash flow statement** will be change accordingly.

Question 5

5. *a)* What are the advantages and disadvantages for an organisation of having a geographical structure? **(10 marks)**

Syllabus section 2

This section was well answered by the majority of respondents. A wide variety of advantages and disadvantages were put forward and marks were awarded for well argued viewpoints.

Organising by geography aids local adaptation to market and/or supplier conditions (3). For organisations that place a strong emphasis on customer service, a geographical structure enables quick response to pressures and opportunities in the locality (1). A geographical structure also enables the creation of many profit centres where the local manager is responsible for revenue and expense (1).

Organising by geography can compromise consistency of image and service (3). It can be very difficult for HQ management to strike the correct balance between how much freedom to give local managers versus how much control to exercise centrally (2).

b) Describe the role of the project manager and the role of the functional manager in organisations that have a matrix structure. **(10 marks)**

Syllabus sections 2 and 9.

This section was poorly answered by most respondents. Quite a number merely listed typical tasks carried out by project and functional managers, rather than describing their roles. The vast majority of candidates failed to identify the role of the functional manager in the professional development of his/her staff. Marks were awarded for all relevant points put forward.

The Project Manager is given overall responsibility for bringing the project in on time, within budget and meeting the project requirements (3). The Project Manager is dependent on obtaining the required people temporarily from specialised functions and managing those people to meet the project objectives (2).

The Functional Manager is responsible for ensuring the assigned people are keeping up with their professional development and for overseeing their general performance (5).

c) Some managers find it difficult to delegate. List FIVE obstacles to successful delegation by managers. **(5 marks)**

Approximately 30% of respondents listed advantages of delegation and tasks that can be delegated, instead of obstacles to delegation. Many relevant obstacles were put forward. Five obstacles were sought with 1 mark for each, the main ones being:

One mark for each of the following or any other relevant point:

- Believing "if you want it done right, do it yourself".

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- Lack of confidence and trust in subordinates.
- Low self confidence (fear of being "shown up").
- Lack of feedback system that provides early warning of problems with delegated tasks.
- Culture e.g. poor example set by superiors who do not delegate.
- Fear of being called lazy.

Question 6

6. *a)* Three techniques used in the process of job design are: job enlargement, job enrichment and job rotation. Briefly describe each technique. **(9 marks)**

Syllabus section 9

Generally well answered.

Job enlargement involves providing the employee with an increased number of tasks to complete, that is, broadening the scope of the tasks that the employee performs (4).

Job enrichment involves providing employees with tasks that involve greater responsibility or deeper involvement. This often means giving them duties previously performed by their superior (4).

Job rotation involves moving the employee from one job to another, with the aim of increasing workplace variety (4).

b) Give examples of job enlargement and job enrichment from jobs within the IT industry and comment on the benefits that might result. **(10 marks)**

Syllabus section 9

Approximately 25% of respondents did not address jobs within the IT industry. Approximately 20% of respondents failed to comment on the benefits that might result. All lost marks accordingly. A sample answer would be:

A company has three large operational systems; there are three maintenance programmers each of whom is assigned to just one of the systems. The job of maintenance programmer could be enlarged by allowing the three programmers to share the maintenance of the three systems amongst themselves. This would result in greater resilience for the organisation in that dependence on key individuals would be reduced. It would give the maintenance programmers greater variety in their work, which is likely to make the work more enjoyable. It will also look better on their CVs.

Job enrichment might be achieved by giving the programmers the responsibility of analyzing the requirements, agreeing them with the users and scheduling the work.

c) Explain the term *job evaluation.* **(6 marks)**

Syllabus section 9

Many candidates confused job evaluation with appraisal. Job evaluation is the process of systematically evaluating the worth of jobs within the organisation by measuring the skill, effort, and responsibility required in the job and the working conditions.