THE BRITISH COMPUTER SOCIETY

THE BCS PROFESSIONAL EXAMINATIONS
Diploma

PROJECT MANAGEMENT

27th April 2006, 2.30 p.m.-4.30 p.m.
Answer FOUR questions out of SIX. All questions carry equal marks.
Time: TWO hours.

*The marks given in brackets are **indicative** of the weight given to each part of the question.*

1. United Electricity is a utility company that generates and distributes electricity to consumers. One of its departments is Customer Services which carries out processes relating to consumers of electricity, in particular billing and the collection of payments. Until now, Customer Services has been able to buy in ready-made, off-the-shelf software, but now there is a need for a specially written computer application.

The management of United Electricity are concerned that, while they are familiar with the management of projects which install off-the-shelf packages, they have little experience of managing projects where new software is to be developed. They are particularly concerned about how they can control the project and ensure the quality of the products of the project.

You are employed as an ICT consultant to advise them. In your initial discussion with United Electricity the elicitation of requirements and software design have been identified as being of particular concern.

Write a memorandum to the management of United Electricity that:

a) describes FIVE possible stages in the software development life cycle (apart from requirements elicitation and software design), identifying the products of each of the stages; **(10 marks)**

b) describes the flows of documents and other products between each of the seven stages of the software life cycle in part *a)* above; **(7 marks)**

c) describes in more detail the activities that are carried out and the processes needed to control quality in the two stages, requirements elicitation and software design. **(8 marks)**

2. *a)* Discuss the specific risks that could arise at the requirements elicitation and software design stages of a software development project. **(10 marks)**

b) For TWO of the risks identified above, suggest:

i) actions that could be taken to reduce the chance of the risk occurring;

ii) actions that could be taken to reduce the damage that the risk could cause when it occurs.

(15 marks)

3. A well-known national organisation has decided to replace its existing, in-house membership database with a package-based system. The choice will be made between 3 short-listed packages. An outline plan for this replacement has been drawn up, with 10 main tasks, as follows:

A	Test and select the most appropriate package	(6 weeks)
B	Modify the selected package	(10 weeks)
C	Develop system test data	(6 weeks)
D	Prepare user manuals	(4 weeks)
E	Design and develop a data migration program	(8 weeks)
F	Carry out system testing	(3 weeks)
G	Train all users	(4 weeks)
H	Test the data migration program	(4 weeks)
I	User acceptance testing	(3 weeks)
J	Implement the replacement database system	(1 week)

Tasks B, C, D and E are all dependent on task A.
Task F cannot start until tasks B and C are both completed.
Task G cannot start until tasks B and D are both completed.
Task H is dependent solely on task E.
Task I cannot start until tasks F, G and H are all completed.
Task J is dependent solely on task I.

a) Draw an Activity on Node diagram for this project, showing all dependencies and the earliest start time, latest finish time, duration and float for each task.

Highlight the critical path and calculate its duration. **(12 marks)**

b) At the end of task A it is realised that task B can be reduced from 10 to 5 weeks, but task F should be extended from 3 to 6 weeks.

In order to reflect these two changes you are required to re-calculate ALL the earliest and latest start and finish times, the floats and to identify all the changes to the critical path. **(8 marks)**

c) In some circumstances a Gantt chart might be used as an alternative to a network diagram.

i) Provide a brief explanation of two advantages of using a Gantt chart when compared with a network diagram.

ii) Provide a brief explanation of two advantages of using a network diagram when compared with a Gantt chart. **(5 marks)**

4. A commercial organisation currently uses an outside agency to carry out all processing related to its payroll. Each month the organisation sends details of staff who have joined or left the organisation or who have changed their payroll status, for example, by being promoted. The outside agency then updates the payroll database and carries out all the other procedures such as the production of payslips and bank credit transfers.

The organisation has decided to bring this processing in-house. An existing payroll package is to be used, but will need considerable modification to deal with the organisation's requirements.

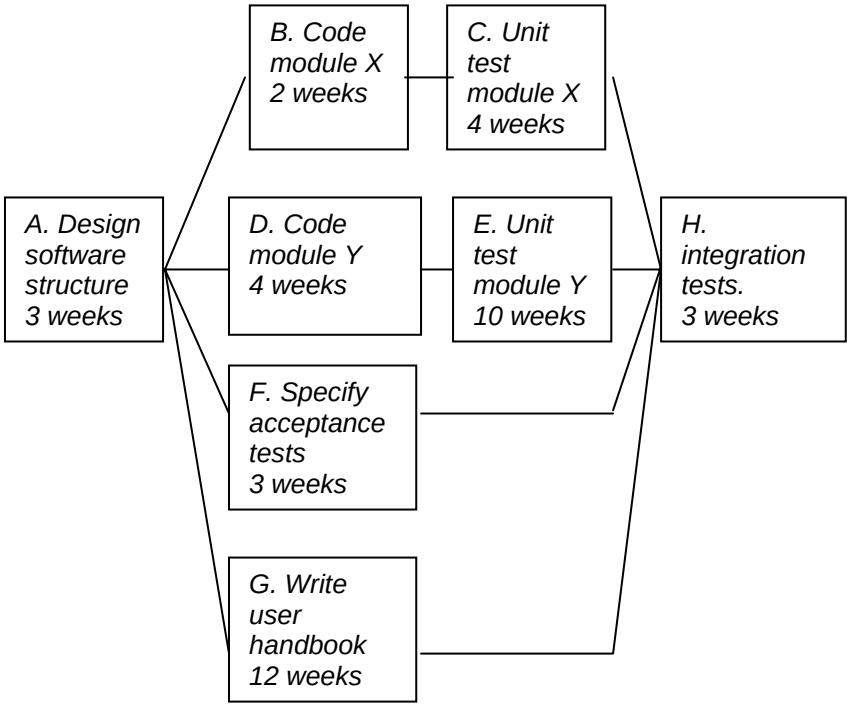
a) Identify the major costs that would be incurred by this project. **(12 marks)**

b) Explain the difference between the top-down and bottom-up approaches to estimation and discuss which would be the most appropriate approach in the scenario above. **(6 marks)**

c) Explain the nature and purpose of the Business Case report and how the estimates of the costs in *a)* above could be used in such a report. **(7 marks)**

5. *a)* Describe the process by which a project manager allocates staff to a project after the activity network has been produced, explaining how this might lead to changes in the structure of the plan. **(12 marks)**

b) Demonstrate the process described in part *a)* above by allocating the staff below to the activities in the initial activity network for a small project, details of which are shown below. (Assume that only one person is to carry out each task). Explain the reasons for each decision made.



Staff details

Staff type	**Staff member**	**Experience**	**Cost/ week**	**Notes**
Systems designer	SD	4 years	£600	Was formerly a software coder
Software coders	SC1	3 years	£400	
	SC2	12 weeks	£150	Allow 50% of normal productivity
Systems assistant	SA	2 years	£200	

(13 marks)

6. *a)* Name FOUR criteria by which a project can be judged a success. **(4 marks)**

b) Your company has decided to develop a new in-house computer system and the project plan has been prepared.

Explain briefly the FOUR key steps (which might then be repeated) in the project control life cycle. **(5 marks)**

c) A project board has been set up and will meet monthly. You are the project manager and must prepare a report for each meeting.

List and briefly describe EIGHT different types of information that you might expect to include in each such monthly report. **(8 marks)**

d) Select FOUR items from the list that you have supplied in part *c)* above and for EACH of these four items briefly discuss:

i) ONE specific problem that might have arisen;

ii) actions that the project board might take to rectify the situation. **(8 marks)**