BCS THE CHARTERED INSTITUTE FOR IT

THE BCS HIGHER EDUCATION QUALIFICATIONS
BCS Level 5 Diploma in IT

IT PROJECT MANAGEMENT

Monday 2nd April 2012 – Morning
Answer **any** FOUR questions out of SIX. All questions carry equal marks
Time: TWO hours

Answer any <u>Section A</u> questions you attempt in <u>Answer Book A</u>
Answer any <u>Section B</u> questions you attempt in <u>Answer Book B</u>

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

Only **non-programmable** calculators are allowed in this examination.

Section A
Answer Section A questions in Answer Book A

A1. a) List SIX techniques for obtaining requirements.

(6 marks)

b) Once the user requirements are known you have a choice between buying a package solution and building a new system. Describe FIVE factors you would consider when deciding which option to take.

(10 marks)

c) Describe THREE methods of quality control that can be used at different stages of a project which implements an off-the-shelf package. Describe how they are similar or dissimilar to the quality control methods used on a project that builds an application.

(9 marks)

A2. a) Draw a template for a risk register or risk log showing the key headings across the top of the register/log.

(10 marks)

b) List FIVE types of response you could make to an identified risk

(5 marks)

c) SciTech creates software for hospital equipment and its best-selling product is used to monitor heart patients. It is an expensive product but customers are always happy to pay a high price because of its quality. A new improved version is due to be rolled out in the next 12 months. The new version will save 10 lives a month. The project manager has identified a number of risks. The key risk is that a major holiday period is due at a key stage of the project when many staff will be requesting leave. Therefore there is a risk that shortages of staff will cause a delay.

Examine the five types of response you have listed in (b) above and explain which type would be:

i) most appropriate for dealing with this risk of possible staff shortages

ii)   the least appropriate for dealing with this risk.

(10 marks)

A3. a)   Identify FIVE key stages of the software development life cycle (SDLC).

(5 marks)

b)   Explain TWO important ways in which an agile approach differs from the SDLC.

(8 marks)

c)   There is a project to change an existing web based booking system for a ticketing company. The system has FIVE different screens that the user can access but the size of the business and the type of tickets and holidays it sells means that new functionality needs to be added. The company can't take the system down for any period of time as it will result in lost bookings. The knowledge of what needs to be done is well known by the users of the system but it is unlikely that these users will be able to help with requirements because they are too busy running the current system. The project must be completed before a major event in one month's time. The budget for the project is fixed.

You are the project manager. Write a memo to the project sponsor describing FOUR factors that would influence the choice of either an agile approach or the SDLC. Relate your answer to the information in the scenario above.

(**12 marks)**

B4. Your company is expanding rapidly and has decided to buy in and install an off-the-shelf (OTS) payroll package to replace the existing in-house system. This will need new equipment and some additional network cabling in some offices. You are to manage this project.

You first need to establish and agree a specification of requirements with the payroll manager. From this you can consider the various main OTS payroll packages that are available, compare them and, together with the payroll manager and project board, select and order the most appropriate package to meet the requirements of your company. Some minor modifications will be required.

You then need to specify and order the new hardware and network communications equipment that will be needed.

Plans then need to be drawn up to test all this new equipment. Separate testing plans are needed for the modified software, followed by full integration and acceptance testing, based on the agreed requirements.

The new hardware and communications will be installed and tested. Then the software can be installed, modified and tested; after which the integration testing can be undertaken.

Whilst this is continuing, user training plans need to be drawn up. The users can be trained as soon as the integration testing is completed.

Before acceptance testing you will need to specify and obtain the accounts data that will need to be transferred to the replacement system.

Once acceptance testing is completed successfully the live data can be loaded and the new system implemented.

a) List the different types of products that are produced at the various stages of the project described in the scenario and draw up a product breakdown structure (PBS) diagram for the project. This should include at least 12 different distinct products.

(8 marks)

b) List the activities described in the scenario and draw up a work breakdown structure (WBS) for the project. This should contain at least 13 different activities and least two breakdown levels and at least four work groups.

(7 marks)

c) Explain the main differences between a WBS and a PBS, illustrating your answer with an example from this project.

(4 marks)

d) Choose an item from your WBS and complete a full statement of work providing information about this item.

(6 marks)

B5. Your company has decided that it needs a new stock control system and that an off-the-shelf package is the best solution. The main tasks have been identified and durations assessed as follows:

A	Draw up a functional requirements specification	4 weeks
B	Consider various relevant software packages and select one	3 weeks
C	Identify and specify the necessary hardware and communications equipment	2 weeks
D	Order the hardware and equipment	1 week
E	Identify the key package modifications needed to meet the functionality required	2 weeks
F	Modify the software package as necessary	8 weeks
G	Accept delivery and install all hardware and equipment needed for the package	10 weeks
H	Design a training plan	2 weeks
I	Set up a testing plan	3 weeks
J	Unit test all the amended package modules	3 weeks
K	Train the users	2 weeks
L	Full integration and acceptance testing	3 weeks
M	Implement the new system	1 week

B cannot start until A is completed

C, E, H and I cannot start until B is completed

D cannot start until C is completed

F cannot start until E is completed

G cannot start until D is completed

J cannot start until F, G and I are completed

K cannot start until H is completed

L cannot start until J and K are completed

M cannot start until L is completed

a) Draw an activity-on-node diagram for these 13 project tasks (A to M). Calculate and display on the diagram, with a node layout key, the earliest and latest start and finish times and float of each task.

(11 marks)

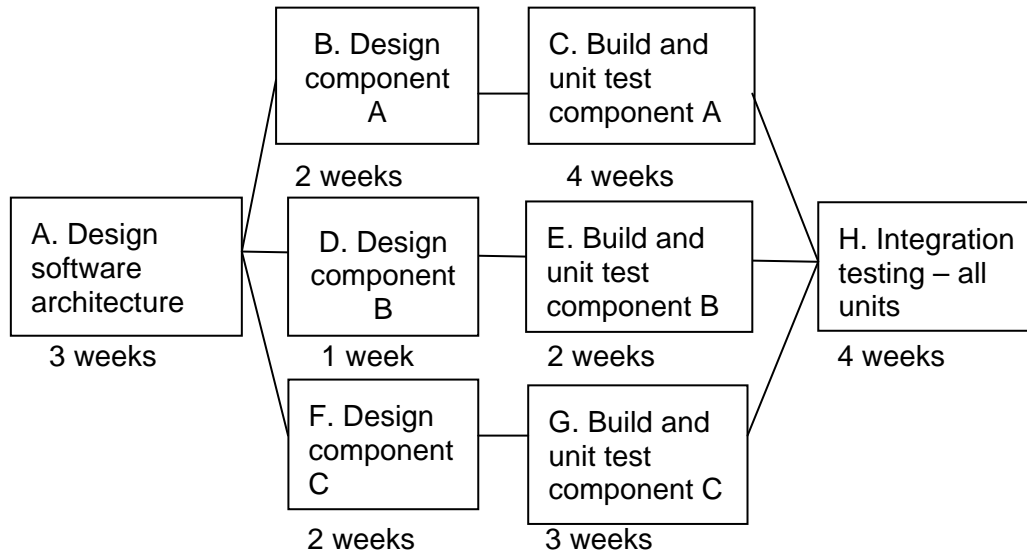b) Describe how each of the following changes to task durations (on their own) would affect the critical path and project duration.

i) Task A - reduced to 3 weeks

ii) Task E - increased to 5 weeks

iii) Task G - reduced to 8 weeks

(8 marks)

c) List and explain briefly THREE advantages and THREE disadvantages of using an activity–on-node diagram for a project plan in comparison with using a Gantt chart.

(6 marks)

B6. The activity network for the development of a small IT system, which comprises three main software components, is shown below:

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                  ┌──────────────┐   ┌──────────────┐
                  │ B. Design    │   │ C. Build and │
                  │ component    │───│ unit test    │
                  │ A            │   │ component A  │
                  └──────────────┘   └──────────────┘
                     2 weeks            4 weeks
┌──────────────┐  ┌──────────────┐   ┌──────────────┐   ┌──────────────┐
│ A. Design    │  │ D. Design    │   │ E. Build and │   │ H. Integration│
│ software     │──│ component    │───│ unit test    │───│ testing – all │
│ architecture │  │ B            │   │ component B  │   │ units         │
└──────────────┘  └──────────────┘   └──────────────┘   └──────────────┘
   3 weeks           1 week             2 weeks            4 weeks
                  ┌──────────────┐   ┌──────────────┐
                  │ F. Design    │   │ G. Build and │
                  │ component    │───│ unit test    │
                  │ C            │   │ component C  │
                  └──────────────┘   └──────────────┘
                     2 weeks            3 weeks
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A lead software architect always undertakes the software architecture design.

Software developers only carry out the designing, building, and unit testing of software components.

A system tester only carries out the integration test.

The weekly rates for these staff are:

Staff type	Weekly rate
Lead software architect	£1200
Software developer 1	£800
Software developer 2	£600
System tester	£500

a) Explain the process by which staff resources are allocated to the activities identified as needed for a project.

(10 marks)

b) Illustrate the approach described in (a) above by applying it to the project above to produce a Gantt chart or histogram showing the staff allocated to each activity, and the planned timing of the activity. Note that only two software developers are available.

(7 marks)

c) Calculate the staff cost of the project.

(4 marks)

d) Discuss how you might re-plan the project if the lead software architect could also carry out the designing, building, and unit testing of software components.

(4 marks)