BCS The Chartered Institute for IT

THE BCS PROFESSIONAL EXAMINATIONS
BCS Level 5 Diploma in IT

SOFTWARE ENGINEERING 1

Friday 30th April 2010- Afternoon
Answer **any** FOUR questions out of SIX. All questions carry equal marks.
Time: TWO hours.

Answer any Section A questions you attempt in Answer Book A
Answer any Section B questions you attempt in Answer Book B

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

Calculators are **NOT** allowed in this examination.

Section A

Answer Section A questions in Answer Book A

A1.

a) Give TWO examples of how conflicting requirements can arise among the stakeholders of a software project during the elicitation phase. For each example, plan resolution actions.

(10 marks)

b) After taking part in a series of successful software projects, you have recently been appointed a project manager within a software engineering organisation. Your first project in this position will be to build a large web-based application. The team has had experience of doing this type of work before, In all of the previous projects, requirements have been thoroughly documented by the customers.

The above scenario is an outline specification for a software project

i. What team structure would you choose and why?
ii. What software process model would you choose and why?

(15 marks)

A2.

You have been asked to build a software system to support a web-site for real-time video-streaming. The system will need to serve a minimum and a maximum number of on-line users, with a given threshold of reliability; also, since it is used on the network, it will need to implement appropriate measures to counter-act attacks on the system.

Considering the above scenario:

a) List and describe at least THREE possible technology risks that one would face in a project of this type.

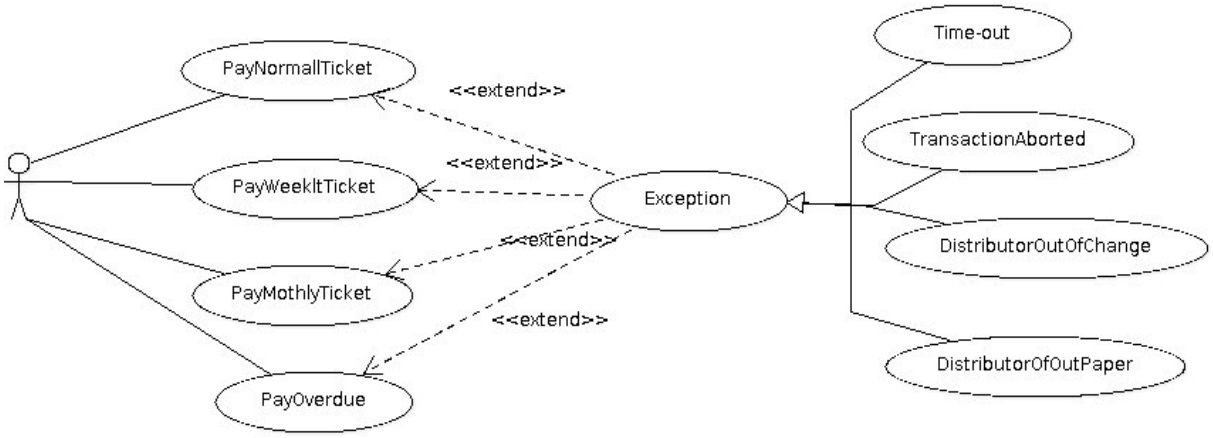
(15 marks)

b) Suggest TWO techniques for estimating the effort and the costs associated with this project.

(10 marks)

A3.

Consider the following UML Use Case scenario:



a) List and document the Use Cases associated with this scenario.

(10 marks)

b) Describe the use of the *<<extends>>* and the *<<include>>* notations.

(10 marks)

c) Draw an additional Use Case, in order to update the tariff of the tickets.

(5 marks)

Section B

Answer Section B questions in Answer Book B

B4.

a) Distinguish between the following: Unit testing, Integration testing and User Acceptance testing

(15 marks)

b) Describe the use of “test drivers” and “test stubs” in the phase of Integration Testing. Explain how they are used in the top-down and bottom-up approaches to integration testing, and provide an example for each approach.

(10 marks)

B5.

a) Consider a word processor and outline THREE possible types of errors that can occur relating these to ways the software implementing the word processing could fail, by completing the following table in your answer book:

Type of error	Example of this error type in word processing software

(9 marks)

b) For two of the examples given in part a) provide a suitable error message that would be appropriate to inform users in the event of failure occurring and explain the reasons why this can be considered informative to the users.

(10 marks)

c) Discuss the difference between a software error, a program fault and a system failure illustrating your answers with relevant examples.

(6 marks)

B6.

a) Explain what is meant by CASE tools in the context of software development and distinguish between upper and lower CASE tools giving examples of each.

(5 marks)

b) Discuss the role that CASE tools play throughout the software life cycle phases and identify specific tools that a software development team would typically use to support their activities.

(15 marks)

c) Many CASE tools employ a software repository. Outline the role of the repository and discuss how it could be used to in developing a programme of software reuse. **(5 marks)**