



THE OPEN UNIVERSITY OF SRI LANKA
BACHELOR OF SOFTWARE ENGINEERING – LEVEL 05
DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING
ECI 5267 – SOFTWARE QUALITY ASSURANCE AND TESTING
FINAL EXAMINATION – 2012 / 2013

Date: 28th, July 2013

Time: 0930-1230 hrs

<INSTRUCTIONS>

1. Question 1 is **compulsory**.
2. Answer **5 questions out of 7** including question 1.
3. Questions are equally weighted unless otherwise stated.
4. This is a closed book exam and no reference books and materials are allowed.

Q1

Write the correct answers (*i.e. Answers should be one line answers*) for the following questions:

- a) What is the type of testing conducted based on an analysis of the specification of a piece of software without reference to its internal workings?
- b) What is the process of evaluating a system or component to determine whether or not the products of a given phase satisfy the conditions imposed at the start of that phase?
- c) What is the process of evaluating software at the end of the software development process to ensure compliance with software requirements?
- d) What is the statement which is usually defined during requirements analysis and states what the test team or tester is expected to accomplish during a specific testing activity. (hint: normally this statement is also included in the Test plan)
- e) Should exhaustive testing be conducted for applications such as medical management, air traffic control or defence systems?
- f) To facilitate the software testing process, a detailed procedure that fully tests a feature or an aspect of a feature is used. What does this procedure named as?
- g) What parameter is used to identify each test case uniquely?
- h) What you call when a risk becomes realised?
- i) What do you need to obtain if your software company is considering continuous improvement on process quality?
- j) What can be used if you need to validate all possible combinations of a given test condition based on the conditions and states?

(Total: 2x 10 Marks)

Q2

Describe the **most important four (4) types of tests** that a software testing team should select to test an application and **provide reasons** for selecting them. The explanation should be based on the Quality assurance process and sequence of each testing to be performed.

(20 Marks)

Q3

- (a) Explain what is Black box testing and state 5 advantages of using Black box testing.

(10 Marks)

- (b) Briefly explain five (5) techniques that can be used to generate test scenarios for effectively testing a text box.

(10 Marks)

Q4

Considering the quality assurance perspective explain the purpose and how the below given methods can be used. Support your arguments with examples.

- a) Root Cause Analysis

(10 Marks)

- b) PDCA (Plan – Do – Check – Act)

(10 Marks)

Q5

Explain the key activities and detail out at least five main responsibilities performed by the below given quality assurance persons.

- a) Quality Assurance Lead

(10Marks)

- b) Quality Assurance Engineer

(10Marks)

Q6

- a) What are the defined levels of the CMMI and explain each level of the CMMI Model.

(10 Marks)

- b) (i) Explain the reasons for obtaining quality standard or process models by a company.

(3 Marks)

- (ii) Briefly explain two (2) quality standards or process models that you will introduce the company.

(2 Marks)

- c) What is a defect? What are the analyses we can conduct based on the defects find on a software application?

(5 Marks)

Q7

The NewWorld Technology is a software quality consultant organisation. Assume you are the QA Lead of the organisation and you are assigned with a new project to do the quality assurance process starting from the ground level. Explain how you will make the following decisions.

- (a) Describe what a test plan is and how test planning takes place using examples. *(5Marks)*
- (b) How you plan the Acceptance testing? *(3Marks)*
- (c) The facts to consider when selecting the test team. *(3Marks)*
- (d) Identify and list down 3 matrices you will consider to evaluate the quality of the application developed. Following details should be listed in the answer:
 - Test metric
 - Purpose
 - How to calculate*(9 Marks)*