THE OPEN UNIVERSITY OF SRI LANKA
FACULTY OF ENGINEERING TECHNOLOGY
BACHELOR OF TECHNOLOGY – LEVEL 5
FINAL EXAMINATION – ACADEMIC YEAR 2009/2010
ECX5267 -

Date : March 23, 2010 **Time: 0930 - 1230 hrs**

Important:

1. This question paper consists of **seven** questions.
2. Questions in SECTION A: **Q1, Q2 which are compulsory,** you have to answer to THREE other questions. **Two** questions selecting from SECTION B and **one** question from SECTION C.
3. Present important but relevant facts and information briefly. Any missing information can be sensibly and reasonably assumed provided that you state them clearly. Wherever necessary, use neatly drawn sketches to explain answers.

SECTION A

Q1.

i. List activities of quality engineering process. Mention where quality engineering activities are placed in the software process.

ii. What are the two parts of quality planning? Identify basic steps in each of them.

iii. What can you do if certain quality goals are difficult to quantify? Can you give 2 examples of such situations and practical suggestions?

(Marks 25)

Q2.

Requirement:
For IRA (Individual Retirement Account) Timed Deposits, require a minimum opening deposit of $500.00

Write 3 Test Cases for the 3 conditions given below, considering the above requirement.

IRA timed deposit with deposit <$500
IRA timed deposit with deposit =$500
IRA timed deposit with deposit >$500

(Marks 15)

SECTION B

Q3.

Given below is a graph of a single program starts with node "S" and go through a FOR loop. On exiting the loop, there is a single IF condition statement, and then the program exits at the node "F". Finally, the exit point is connected back to the entry point.

i. Define Cyclomatic complexity

ii. Calculate the Cyclomatic complexity for the flow graph given below.

iii. Explain why the value of Cyclomatic complexity is important to testers?

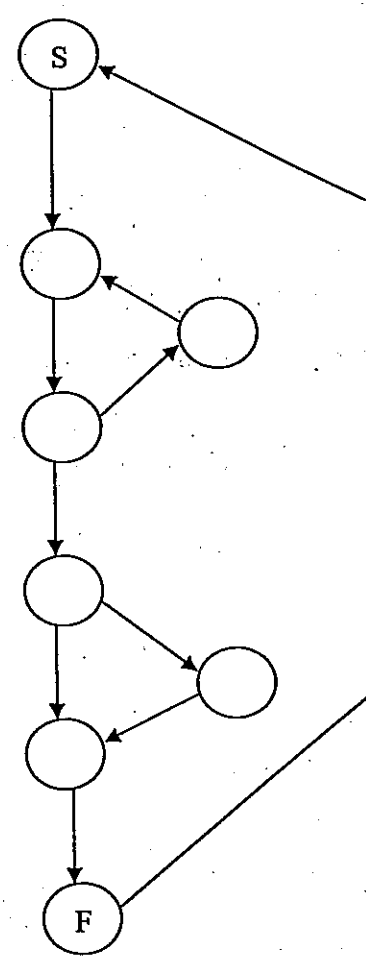

Figure 1: Graph of a single program

Hint:
For strongly-connected control flow graph,

$$M = E - N + P$$

For a control flow graph of a simple program;

$$M = E - N + 2P$$

Where;
M = cyclomatic complexity
E = the number of edges of the graph
N = the number of nodes of the graph
P = the number of connected components

(Marks 20)

Q4.

Assume that you joined to IT department of a finance company, recently. There are only 5 developers in the department. You have been appointed as the Team Leader. You have to organise and manage the team to develop software for a requirement of the company.

i. Define 'risk' in software development (SD). How do risks affect the quality?

ii. Considering the above situation, identify and list four possible risks that could be occurred in this environment of software development.

iii. Briefly describe two risk identification techniques to mitigate such risks.

Please mention the assumptions made on this situation.

(Marks 20)

Q5.

i. Compare and contrast objectives of verification against objectives of validation

ii. Explain constraints that can be faced during verification and validation

iii. Assume you have been promoting testing throughout the development life cycle, but your manager does not really understand what specifically is involved. Your manager has asked you to present the concept at an IT staff meeting. You chose the "V" concept of testing model to explain testing throughout the development life cycle.

Explain and illustrate with a graphic of the "V" concept of testing.

(Marks 20)

SECTION C

Q6.

i. Explain why Test Automation is necessary in software development

ii. Write the steps of Test Automation Approach

iii. List 5 features of automated software testing systems

iv. Illustrate Test Automation Life cycle and describe different phases of Test Automation life-cycle.

(Marks 20

Q7.

i. List 4 challenges faced by a manual tester.

ii. Testing is endless. We cannot test till all the defects are removed. State 4 factors to decide when to stop testing

iii. Explain difference between load test and performance test.

iv. State the difference between functional testing and black box testing.

(Marks 20