MACHAKOS UNIVERSITY COLLEGE

(A Constituent College of Kenyatta University)
University Examinations for 2014/2015 Academic Year

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

SECOND SEMESTER EXAMINATION BACHELOR OF COMPUTER SCIENCE

SCO 203: SOFTWARE TESTING AND QUALITY ASSURANCE

Date: 31/3/2015 **Time: 2:00 – 4:00 PM**

INSTRUCTIONS:

ANSWER QUESTION ONE AND ANY OTHER TWO

Question 1 (30 Marks)

a) The Capability Maturity Model (CMM) rates software companies according to how well they identify and manage their software processes. The model has five levels: Initial, Repeatable, Defined, Managed, and Optimizing. Briefly describe each of the five levels. What advantages are there for a company to move up to the top level **(6 marks)**

b) Explain what a software process is. Describe any THREE software processes you know of. **(8 marks)**

c) What is meant by the term Software Process Evaluation? Explain any TWO techniques used in Software process evaluation. **(6 marks)**

d) Complete testing of a web-based system before going live can help address issues before the system is revealed to the public:

   i. Give THREE challenges of the web application testing **(3 marks)**

   ii. Describe THREE types of the web testing practices **(6 marks)**

e) Differentiate between validation and verification. **(1 mark)**

Question 2 (20 Marks)

a) Explain the Spiral software development life cycle model with a neat sketch of all its components with an illustration. State its strengths and weaknesses. Justify some of the applications where spiral model will be more suitable. **(16 marks)**

b) What is 'Software Quality Assurance'? **(2 marks)**

c) Differentiate between a test case and a test plan **(2 marks)**

Question 3 (20 Marks)

a) List and explain any TWO advantages of the waterfall model over the prototyping model. **(4 marks)**

b) What is Agile Software Development and how does it impact testing? **(4 marks)**

c) Explain the role of documentation in Quality Assurance? **(4 marks)**

d) Explain what can be done if requirements are changing continuously? **(4 marks)**

e) Explain any FOUR key challenges of software testing? **(4 marks)**

Question 4 (20 Marks)

a) Software testing is completely guided by software requirements specification and design specifications, and supported by test strategy and test approach depending on assumption and risks of development, testing, and usage (Limaye, 2009).

   i. What is the primary goal of software testing? **(2 marks)**

   ii. Give THREE reasons why testing is necessary **(6 marks)**

   iii. Explain THREE basic principles of software testing **(6 marks)**

   iv. Describe any THREE kinds/types of software testing **(6 marks)**

QUESTION 5 (20 Marks)

a) Give any THREE reasons why one would choose automated testing over manual testing? **(6 marks)**

b) Differentiate between alpha and beta testing? **(4 marks)**

c) Give the 5 common problems in the software development process? **(5 marks)**

d) Explain the differences between testing and debugging. **(5 marks)**