



## KENYATTA UNIVERSITY

### UNIVERSITY EXAMINATIONS 2011/2012

#### SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE – SOFTWARE ENGINEERING

#### SSE 311: SOFTWARE TESTING AND QUALITY ASSURANCE

DATE: Monday 16<sup>th</sup> April, 2012

TIME: 11.00 a.m.- 1.00 p.m.

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#### INSTRUCTIONS

Answer Question ONE and any other TWO Questions.

#### Question One

- a) It is a motto used by software developers that 'quality' must be built into the software as it is developed. Explain the term software quality.  
[2 marks]
- b) Explain two parameters that can be used to measure software quality.  
[4 marks]
- c) Distinguish between white box testing and black box testing.  
[4 marks]
- d) Explain any four functions of software quality assurance in an organization. [8 marks]
- e) Briefly explain any five attributes of high quality software. [10 marks]

#### Question Two

Quality assurance involves defining or selecting standards that should be applied to the software development process or software product.

- a) Explain the term 'Software Standard' [2 marks]
- b) Name and explain any two types of standard that may be established as part of the quality assurance process. [4 marks]

- c) Explain any two reasons why standards are important. [4 marks]
- d) Documentation standards are important documents in a software project because documents are the only tangible way of representing the software and software process. Explain any **Two** types of documentation standards. [4 marks]
- e) Why should software quality plan be developed, and identify any four sections of a software quality plan. [6 marks]

### Question Three

- a) Briefly explain testing stages in the development of software. [8 marks]
- b) What is the purpose of a test plan? [2 marks]
- c) Name and explain any five topics that should be contained in a test plan, stating what should be considered in each topic. [5 marks]
- d) What does the word metric mean in the context of software? [2 marks]
- e) Distinguish between control metrics and predictor metrics [3 marks]

### Question Four

Explain clearly the difference between the following terms:

- a) Quality control and Quality assurance [3 marks]
- b) Walkthroughs and Inspections [3 marks]
- c) Software maintenance (SM) and Software configuration management (SCM) [3 marks]
- d) Standard and Baseline [3 marks]
- e) Explain why it is important to estimate the size of the delivered software at the specification stage [4 marks]
- f) Software projects need to be effectively managed to produce a quality product. Explain any two differences between software and hardware products. [4 marks]

### Question Five

- a) The main use of testing activity is as a defect detection mechanism. There are FOUR major models of the testing process. [10 marks]
- b) Suppose the following data on defects per 1000 lines of code is available

| Stage                       | TYPES OF DEFECTS |     |     |     |       |
|-----------------------------|------------------|-----|-----|-----|-------|
|                             | R.D              | S.D | D.D | C   | Total |
| Requirement Definition (RD) | 6.5              | 0   | 0   | 0   | 6.5   |
| Structured Design (SD)      | 0.8              | 4   | 0   | 0   | 4.8   |
| Detailed Design (DD)        | 0.1              | 2   | 6   | 0   | 8.1   |
| Coding (C)                  | 0                | 1   | 2.5 | 3.2 | 6.7   |
| Unit Testing                | 0                | 1.5 | 4.6 | 1.8 | 7.9   |
| Integration Testing         | 0                | 4.2 | 1.4 | 0.5 | 6.1   |

Software is being developed for a new client in a similar business area. The size of the project is estimated to be 10,000 KLOC. Find out all the estimated types of errors for the new project.

[10 marks]

