



MACHAKOS UNIVERSITY

University Examinations for 2018/2019

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

SECOND YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)

SCO 203: SOFTWARE TESTING AND QUALITY ASSURANCE

DATE:

TIME:

INSTRUCTIONS

Answer Question ONE (Compulsory) and any other TWO questions.

QUESTION ONE (COMPULSORY) (30 MARKS)

- a) Define the following terms
- i) Unit Testing (1 mark)
 - ii) Integration Testing (1 mark)
 - iii) Acceptance Testing (1 mark)
 - iv) Black Box Testing (1 mark)
 - v) White Box Testing (1 mark)
- b) Briefly explain Quality Assurance (QA) monitoring and Evaluation (6 marks)
- c) Briefly explain software metrics as indicator of reliability and quality. (9 marks)
- d) Describe the following
- i) Validation (2 marks)
 - ii) Verification Control (2 marks)
 - iii) Cost of Quality (2 marks)
 - iv) Standard (2 marks)
 - v) Quality Control (2 marks)

QUESTION TWO (20 MARKS)

- a) Briefly explain the generic view of software production process. (5 marks)
- b) Construct a software process framework with a set of software engineering actions and the associated software engineering products. (10 marks)

QUESTION THREE (20 MARKS)

- a) The following is the definition of software quality. Fill the gap with appropriate words (3 marks)

Software quality has been defined as conformance to ...i..... stated functional and.....ii.... requirements, explicitly documented developmentiii....., and characteristic that are expected of all....iv... developed software.

- b) The figure below shows McCall's software quality factors. Study it and complete the table. (5 marks)

Product	Quality factors
Product revision	Maintainability
	i.....
	ii.....
Product Transition	Portability
	iii.....
	Interoperability
Product Operations	iv.....
	v.....
	Efficiency
	Integrity
	Usability

- c) The following represent a minimum set of guidelines for formal technical reviews. Which ones are not?

- i. Review the product, not the producer (1 mark)
- ii. Set agenda and maintain it (1 mark)
- iii. Unlimited debate and rebuttal (1 mark)
- iv. Don't review early reviews (1 mark)

- d) Software quality assurance is comprised of variety of tasks associated with seven major activities. Complete the activities shown below

- i) Application of technical methods
- ii) Conduct of formal technical review
- iii) (1 mark)
- iv) Enforcement of standards
- v) (1 mark)
- vi) (1 mark)
- vii) Record keeping

QUESTION FOUR (20 MARKS)

- a) Discuss the FIVE views of Quality according to Kitchenham and Pfleeger's article (5 marks)
- b) Describe the Capability Maturity Model (CMM) as a Quality Assurance Model (10 marks)

QUESTION FIVE (20 MARKS)

- a) Describe the TWO known process models for Software Testing (10 marks)
- b) Describe the meaning of the following terms as used in Software Testing
 - i) Failure (1 mark)
 - ii) Error (1 mark)
 - iii) Fault (1 mark)
 - iv) Defect (1 mark)
 - v) Regression Testing (1 mark)