



# MURANG'A UNIVERSITY OF TECHNOLOGY

## SCHOOL OF COMPUTING AND INFORMATION TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE

UNIVERSITY ORDINARY EXAMINATION

2020/2021 ACADEMIC YEAR

**THIRD YEAR FIRST SEMESTER EXAMINATION FOR BACHELOR OF  
SCIENCE IN COMPUTER SCIENCE**

SCS 304 – SOFTWARE ENGINEERING

DURATION: 2 HOURS

**Instructions to candidates:**

1. Answer question One and Any Other Two questions.
2. Mobile phones are not allowed in the examination room.
3. You are not allowed to write on this examination question paper.

## SECTION A: ANSWER ALL QUESTIONS IN THIS SECTION

### QUESTION ONE (30 MARKS)

- a) List any two characteristics of a good software project manager. (2 marks)
- b) Explain the benefits of system testing under each of the following themes
  - i. Customer satisfaction and profitability (2 marks)
  - ii. Safety (2 marks)
  - iii. Cost effectiveness (2 marks)
- c) explain two reasons why requirement engineering is one of the most critical processes of the software development cycle. (2 marks)
- d) verification and validation has a great role in software development process and it is therefore necessary that verification and validation are done at each step of the development process
  - i. compare and contrast verification and validation. (2 marks)
  - ii. give two benefits of each. (4 marks)
- e) a software metric is a standard of measure of a degree to which a software system or process possesses some property. Tom DeMarco a software engineer, author and consultant once said you cannot control what you cannot measure. With respect to Tom DeMarco's sentiments:
  - i. Discuss the relevance of software metrics. (6 marks)
  - ii. Explain any four software metrics. (8 marks)

## SECTION B – ANSWER ANY TWO QUESTIONS IN THIS SECTION

### QUESTION TWO (20 MARKS)

- a) Distinguish between functional requirements and non-functional requirements in relation to software design and development. (4 marks)
- b) System development lifecycle refers to the various processes that are followed during the development of a system. State any two deliverables of each of the following processes
  - i. Design (2 marks)
  - ii. Testing (2 Marks)
  - iii. Implementation (2 marks)
- c) Discuss three activities of software quality assurance. (6 marks)
- d) Highlight four advantages of agile development methodology. (4 marks)

### QUESTION THREE (20 MARKS)

- a) In software development, quality management are critical to software quality. Discuss three main activities of software quality management. (6 marks)
- b) Discuss any three challenges in the software development projects in Africa. (6 marks)
- c) Differentiate cohesion and coupling as used in software design giving examples in each case. (4marks)

- d) Highlight four reasons why software project management is important in development process. (4 marks)

**QUESTION FOUR (20 MARKS)**

- a) Software maintenance is the process of changing, modifying and updating a software product.
- i. Discuss why it is inevitable for an organization to conduct software maintenance process. (4 marks)
  - ii. State and explain three types of software maintenance. (6 marks)
- b) Software testing is the process of evaluating and verifying that a software product does what it is supposed to do. Using relevant examples, compare and contrast the white box testing and black box testing strategies. (6 marks)
- c) Discuss four components of CASE tools as used in software engineering. (4 marks)