MURANG'A UNIVERSITY OF TECHNOLOGY

SCHOOL OF COMPUTING AND INFORMATION TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE

UNIVERSITY ORDINARY EXAMINATION

2020/2021 ACADEMIC YEAR

FIRST YEAR **SECOND** SEMESTER EXAMINATION FOR BSc IN SOFTWARE ENGINEERING

SCS103 – FUNDAMENTALS OF 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) Explain THREE most important characteristics of requirement specification and explain why each of them is so important. (6marks)
b) Describe system and briefly explain the THREE types of system testing. (5marks)
c) Reliability and usability are important software quality attributes. Give a brief explanation of both attributes. (4marks)
d) Briefly explain the objectives of system design. (5marks)
e) Discuss activities carried out during each phase of spiral model. (4marks)
f) Explain the following as used in software engineering:

i. Software quality assurance (2marks)
ii. Non-functional requirements (2marks)
iii. Software reverse engineering (2marks)

SECTION B – ANSWER ANY TWO QUESTIONS IN THIS SECTION

QUESTION TWO (20 MARKS)

a) Describe any FOUR types of risks that might be identified in software project checklist.(8marks)
b) The FOUR categories of software maintenance are; perfective, adaptive, corrective, and preventive.
   i. Explain the meaning of each category. (4marks)
   ii. How would you classify the following maintenance activities:
      - Hardware and software platform changes
      - Correcting error found by users.
      - Producing a design document(as the original document has been lost)
      - Modifying some part of software due to change in user requirement.
c) Explain the following design strategies:
   i. Function design
   ii. Object oriented design (4marks)

QUESTION THREE (20 MARKS)

a) Explain the importance of verification and validation in software development. (4marks)
b) Explain any THREE quality parameters which are used in software system. (6marks)
c) Describe the following types of user testing:
   i. Alpha testing
   ii. Beta testing
   iii. Acceptance testing. (6marks)
d) Explain the difference between blackbox and whitebox testing. (4marks)

QUESTION FOUR (20 MARKS)

a) Explain any FOUR benefits that incremental software development process model might have compared to waterfall model. (8marks)

b) Coupling and cohesion are TWO important concepts in software engineering. Define these TWO concepts and explain the problem that arise if two modules have higher coupling. (8marks)

c) Explain the following object oriented concept used in software engineering:

   i. Encapsulation (2marks)

   ii. Polymorphism (2marks)