(University of Choice)
MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

MAIN CAMPUS

UNIVERSITY SPECIAL/SUPPLEMENTARY EXAMINATIONS
2021/2022 ACADEMIC YEAR

FIFTH YEAR EXAMINATIONS

FOR THE DEGREE
OF
BACHELOR OF SCIENCE IN ELECTRICAL AND COMMUNICATION ENGINEERING

COURSE CODE: ECE 512

COURSE TITLE: SOFTWARE ENGINEERING

DATE: 5th October, 2022   **TIME:09.00 a.m-11.00 a.m.**

INSTRUCTIONS TO CANDIDATES

Question ONE (1) is compulsory
Answer Any Other TWO (2) questions

TIME: 2 Hours

MMUST observes ZERO tolerance to examination cheating

This Paper Consists of 3 Printed Pages. Please Turn Over.

SECTION A: ANSWER ALL QUESTIONS IN THIS SECTION

QUESTION ONE (30 MARKS)

a) List any four software development process models (4 marks)

b) Discuss the fundamental activities in the software development life cycle (7 marks)

c) Reliability and usability are important software quality attributes. Give a brief explanation of both attributes. (4 marks)

d) Briefly explain the objectives of software design. (5 marks)

e) Enlist any four principles of agile methods. (4 marks)

f) Explain the following as used in software engineering:
   i. Software quality assurance (2 marks)
   ii. Functional requirements (2 marks)
   iii. Software validation and verification (2 marks)

SECTION B – ANSWER ANY TWO QUESTIONS IN THIS SECTION

QUESTION TWO (20 MARKS)

a) A small specialist language training company would like to improve the services offered to the existing clients and increase its client base by replacing the existing call center and paper-based mailshots with outline web technology deployment. As a consultant requirements engineer, discuss two tools and techniques that you would deploy to elicit, analyze, document and check services requested by the company and any actual or implied constraints. (10 marks)

b) Explain five difficulties that may be encountered in the process of requirements elicitation and analysis. (10 marks)

QUESTION THREE (20 MARKS)

a) Explain any four benefits that an spiral software development process model might have compared to the waterfall model. (8 marks)

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

c) Explain the following object oriented concepts used in software engineering:
   i. Inheritance (2 marks)
   ii. Polymorphism (2 marks)

QUESTION FOUR (20 MARKS)

a) Describe any four types of risks that might be identified in a software project checklist.

(8 marks)

b) The four categories of software maintenance are: perfective, adaptive, corrective and preventive.

    i.   Explain the meaning of each category. (4 marks)

    ii.   How would you classify the following maintenance activities? (4 marks)

        I.   Hardware and software platform change

        II.   Correcting errors found by users

        III.   Producing a design document (as the original document has been lost), and,

        IV.   Modifying some parts of software due to changing user requirements.

c) Explain the following design strategies:

    i.   Functional design (2 marks)

    ii.   Object oriented design (2 marks)

QUESTION FIVE (20 MARKS)

a) Discuss five kinds of project plans in project management. (10 marks)

b) Jack has been tasked with carrying out software maintenance for a client on behalf of his company/employer. Discuss five steps he is supposed to follow to professionally carry out this task. (10 marks)