MURANG’A UNIVERSITY OF TECHNOLOGY

SCHOOL OF COMPUTING AND INFORMATION TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE

UNIVERSITY ORDINARY EXAMINATION

2018/2019 ACADEMIC YEAR

SECOND YEAR SECOND SEMESTER EXAMINATION FOR BACHELOR OF SCIENCE IN SOFTWARE ENGINEERING

SCS 207 – SOFTWARE DESIGN AND ARCHITECTURE

DURATION: 2 HOURS

DATE: 23/4/2019
TIME: 9-11 A.M.

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) With the aid of an example, distinguish between functional and non-functional requirements. (6 marks)

b) Discuss the difference between:
   i. Component based, layered and object oriented architectural design. (3 marks)
   ii. Client/server architectural design and 3-tier architectural design. (3 marks)

c) Discuss four differences between life cycle model and process models. (4 marks)

d) (i) With the aid of examples, distinguish between data flow diagram and uml diagrams. (4 marks)
   (ii) With the aid of diagram, discuss five symbols of a state chart diagram. (5 marks)

e) (i) Describe three types of black box tasting. (3 marks)
   (ii) Highlight two differences between black box tasting and white box tasting. (2 marks)

SECTION B – ANSWER ANY TWO QUESTIONS IN THIS SECTION

QUESTION TWO (20 MARKS)

a) (i) State at least four key participants in software configuration management team. (2 marks)
   (ii) Explain three activities that are carried out in change control method. (6 marks)

b) (i) Discuss various reasons why data flow diagrams are used in software design. (4 marks)
   (ii) With the aid of a level 1 data flow diagram, explain the processes of a food ordering system of a certain hotel. (6 marks)

c) State four advantages of using uml diagram when developing an application. (2 marks)

QUESTION THREE (20 MARKS)

a) (i) Agile development is a process that values customer collaboration over contract negotiation. Discuss issues a software engineer should be mindful when adopting this approach. (4 marks)
   (ii) Explain four types of agile process models. (8 marks)

b) State five disadvantages of traditional process models. (5 marks)

c) State three goals of software design and architecture. (3 marks)
QUESTION FOUR (20 MARKS)

a) (i) Define system modeling. (2 marks)
     (ii) With the aid of example, explain the difference between context modeling and behavioral modeling. (6 marks)

b) Distinguish between the following: (6 marks)
   i. Real time systems
   ii. Soft real time systems
   iii. Hard real time systems

c) Discuss at least three components of a real time operating systems. (6 marks)