THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of Jkuat)

Faculty of Engineering and Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

UNIVERSITY EXAMINATION FOR DEGREE IN
BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY (BSc. I.T. 9S)
(YR III, SEM I)

BIT 2203 : ADVANCED PROGRAMMING

END OF SEMESTER EXAMINATIONS

SERIES: AUGUST/SEPTEMBER 2011

TIME: 2 HOURS

Instructions to Candidates:

You should have the following for this examination
- *Answer Booklet*

This paper consist of **FIVE** questions in **TWO** sections **A** & **B**
Answer question **ONE (COMPULSORY)** and any other **TWO** questions
Maximum marks for each part of a question are as shown
This paper consists of **THREE** printed pages

SECTION A (*Compulsory - 30 Marks***)**

Question 1

a) (i) Define the term function decomposition

(ii) Outline the main disadvantage of functional decomposition (4 marks)

b) Why do requirements change in software development? Explain (6 marks)

c) Is the following observation correct:

"we really do not spend much time fixing bugs"

If correct, explain how, otherwise substantiate (4 marks)

d) With the aid of a diagram, briefly describe the components that constitute a sequence diagram (8 marks)

e) (i) What does a creational design pattern supposed to do?

(ii) Why are creational design patterns important?

(iii) Differentiate between a class-scoped and object-scoped creational pattern (8 marks)

SECTION B (*Attempt any TWO questions*)

Question 2 (*20 marks*)

a) (i) What does the acronym UML stand for?

(ii) Briefly describe the importance of UML (4 marks)

b) (i) Briefly explain the objective of a class diagram

(ii) With the aid of an example, explain the relationship types that exist amongst object of different classes in a class diagram (10 marks)

c) Outline the symbols used with each access modifier when defining properties of an object in a class (3 marks)

d) (i) What is the main objective of an interaction diagram?

(ii) Outline the **TWO** types of Interaction diagrams that you know (3 marks)

Question 3 (*20 marks*)

a) (i) What is a software component?

(ii) Give the characteristics that distinguish a software component from another software module

(iii) How are software components important in terms of reuse? (9 marks)

b) Briefly describe the **TWO** interfaces any software component must have. (3 marks)

c) (i) Define the term component based software engineering.

(ii) In your observation what are the requirements to components based software engineering? (8 marks)

Question 4 (*20 marks*)

a) (i) Define the term design pattern

(ii) What constitutes a design pattern? (8 marks)

b) Why are design patterns important in software development? (6 marks)

c) Give the **THREE** classes of design patterns and for each class outline **TWO** patterns (6 marks)

Question 5 (*20 marks*)

a) (i) What is a framework?

(ii) Briefly describe the term application framework and outline its properties

(iii) Give a description of how one of the adapters work (7 marks)

b) What does each of the following acronyms stand for?

(i) JSP

(ii) JSTL

(iii) XML

(iv) CGI

(v) JSF (5 marks)

c) Struts as an application framework is based on the MVC architecture. Briefly explain how this architecture works (8 marks)