KENYA METHODIST UNIVERSITY
FIRST TRIMESTER EXAMINATION, APRIL 2008

DEPARTMENT	**:**	**COMPUTER AND INFORMATION SCIENCE**
COURSE CODE	**:**	**COMP 322**
COURSE TITLE	**:**	**PROGRAM DESIGN AND DEVELOPMENT**
TIME	**:**	**2 HOURS**

Instructions:

Answer ALL questions in Section A and any other TWO questions in Section B.

SECTION A

i. Define the term program design. (2 mks)

ii. Describe 2 design tools used to aid in program design. (4 mks)

iii. Differentiate between algorithm and program (2 mks)

iv. Define the following terms:

   a. Error tolerance

   b. Error detection (2 mks)

v. What is a program design review? List at least 4 people who are involved in this process. (3 mks)

vi. Give 3 reasons for the need for standards and procedures. (3 mks)

vii. Briefly describe 4 types of errors one could encounter when program testing. (4 mks)

viii. For the following software process models, list the benefits and drawbacks and how the model handles a significant change in the requirements late in the development

   a. Waterfall model

   b. Phased development (10 mks)

SECTION B

Question One (20 Marks)

i. Third year Computer Science at KEMU consist of 10 students, and each student takes eight subjects within a semester. You are asked to write a program that finds the average class mark obtained at the end of the semester. The average class mark is computed by finding the average mark obtained by each student, adding him or her all together and then dividing by the number of students within the class. Design the algorithm and implement it using a language of your choice (10 mks)

ii. With the help of a diagram, discuss 4 approaches used in integration testing. (10 mks)

Question Two (20 Marks)

i. Describe 3 types of documentation. (6 mks)

ii. User interface design should be done in conjunction with other software engineering activities. Briefly explain any four software usability principles that you should consider during user interface design. (4 mks)

iii. Explain 3 tools used in system testing. (6mks)

iv. Differentiate between top-down and bottom-up approaches to program design. (4 mks)

Question Three (20 Marks)

i. Give 2 types of analysis that can be carried out on an algorithm. (2 mks)

ii. Define coupling and cohesion and their importance in program design. (4 mks)

iii. Compare and contrast software testing are software inspections? Which should come first? Justify. (6 mks)

iv. List and explain 4 desirable features in a programming language. (8 mks)