



AFRICA
UNIVERSITY

(A United Methodist-Related Institution)
INVESTING IN AFRICA'S FUTURE

FACULTY OF MAGEMENT AND ADMINISTRATION

MAIN EXAMINATION QUESTION PAPER

COURSE CODE	CSC100
COURSE TITLE	Problem Solving & Programming Concepts
EXAMINER	Mr. Agrippah Kandiero
DATE	NOV-DEC 2014
DURATION	3 Hours
INSTRUCTIONS	<ol style="list-style-type: none">1. Answer questions as directed in each section2. Use expanded bullet point form (No essays)3. Avoid ZERO intelligible content4. Credit will be given for neat, clear legible answers

SECTION A – Answer all questions

1. Summarize the distinctions between a process, an algorithm, and a program. [5]
2. In what sense do the steps described by the following list of instructions fail to constitute an algorithm? [5]
 Step 1. Take a coin out of your pocket and put it on the table.
 Step 2. Return to Step 1. Outline and describe the six steps of problem solving?
3. The Euclidean algorithm finds the greatest common divisor of two positive integers X and Y by the following process: As long as the value of neither X nor Y is zero, continue dividing the larger of the values by the smaller and assigning X and Y the values of the divisor and remainder, respectively. (The final value of X is the greatest common divisor.) [10]
4. What are the tools of problem solving described in this course? [5]
5. Name the major types of modules and explain their functions. [3]
6. List the kinds of *Process* modules. [3]
7. What is meant by the cohesion of a module? [3]
8. What is meant by coupling modules? [3]
9. How are modules coupled? [3]

SECTION B- Answer all questions

B1. [20 Marks]

- a. What is the decision logic structure?
- b. What are the three types of decision logic?
- c. Without specific data, outline an algorithm and a flowchart for each of the three types of decision logic.
- d. What factors should determine which decision logic type to use for a specific problem?
- e. How do you use a decision table?
- f. When should you use single decision logic over nested decision logic?
- g. Why would the case logic structure be used instead of the decision structure?

B2. [20 Marks]

Evaluate for $A = \text{True}$, $B = \text{True}$, $C = \text{False}$, $D = \text{False}$.

- a. $R = (A \text{ OR } B) \text{ AND } C$
- b. $R = A \text{ AND } B \text{ OR } C$
- c. $R = B \text{ AND } C \text{ OR } A$
- d. $R = \text{NOT } C \text{ AND NOT } D \text{ OR } A$
- e. $R = \text{NOT } C \text{ OR NOT } D \text{ AND } A$

Set up a logical expression for the following policy on using a company credit card. The card may be used if the

- a. Balance plus sales amount is less than the maximum allowable amount.
- b. Last payment was less than 45 days ago.
- c. Credit card has not expired.

B3. [20 Marks]

- a. Why would you use a *While/WhileEnd* over the other two? [4]
- b. Why would you use a *Repeat/Until* over the other two? [4]
- c. Why would you use an automatic-counter loop over the other two? [4]
- d. Explain a recursive procedure. [4]
- e. What do you have to do to stop the continued recalling of a recursive procedure? [4]

THE END