

**W1-2-60-1-6**

## JOMO KENYATTA UNIVERSITY

**OF AGRICULTURE AND TECHNOLOGY**

# University Examinations 2016/2017

**YEAR ONE SEMESTER TWO EXAMINATIONS FOR THE DIPLOMA IN INFORMATION TECHNOLOGY**

**DIT 0202: INTRODUCTION TO PROGRAMMING AND ALGORITHM**

**APRIL 2017 TIME: 1.5 HOURS**

**INSTRUCTIONS: ANSWER ALL QUESTIONS IN SECTION A AND 2 QUESTIONS IN SECTION B**

**QUESTION ONE**

a) What is structured programming (2 marks)

b) Explain the difference between the two expressions below (2 marks)

c) What is an algorithm (1 mark)

d) Describe the three kind of analysis of an algorithm (6 marks)

e) Write a for loop that prints the given list of numbers separated by one space. You may use the library. The first one is done for you as at example.

1 2 3 4 5 for (inti=1;i)

First five numbers cout

-2-3-4-5-6

Counting down from -2 to -6

2 4 6 8…998 1000

Even #s 2 through 1000

f) Differentiate between low level and high level programming languages (6 marks)

g) Write a program that prompts the user to enter his/her name then display their name of console (5 marks)

h) What are the functions of the cmathand iomaniplibraries in C++ (2 marks)

**SECTION B**

**QUESTION TWO**

a) Write a function random student which returns the name of one of the four students listed below at random: Tom Mary Jane Jerry. All four names should be equally likely to be retuned to receive full credit you must use a switch statement (5 marks)

b) Write a function printTriangle that prints out the letters of a given string in a right triangle as shown below. The first letter of the word appears once in the first row, the second letter appears twice in the second row and so on. Each column of the triangle should have width E. you may use the iomanip library. An example call to the function is shown below, with the corresponding output beside it (7 marks)

string name =”JOANNA” J

printTriangle (name); JO

JOA

JOAN

JOANN

JOANNA

c) What are the rules of naming variables in C++ (3 marks)

**QUESTION THREE**

a) The faulty program below is supposed to print out every other character of an entered word, starting with the first character. For example the word “hobbits” should become “hbis” correct the errors, referencing the line number to the left. You don’t need to rewrite the whole program. Make as few changer as possible (10 marks)

#include iostream

Using namespace std;

Int main ();

Cont

String s;

cirs;

string z;

while (x)

{

Z=z+s.substr (x,1);

X++;

}

cont “The string with every other letter is:”

z”/n”;

}

b) Briefly explain the difference between value and reference parameters. How are they differentiated in C++ syntax (5 marks)

**QUESTION FOUR**

a) Write down the pseudo code of a simple sort algorithm in C++ (5 marks)

b) Convert the following if/else sequence to a switch statement (7 marks)

Int x;

Cin x;

if(x==2)

cont “x=2”;

else if (x==4)

cont “x=4”;

else

cont “Else”;

c) list down at least three features of a well-designed program (3 marks)

**QUESTION FIVE**

a) How are arrays declared and initialized in C++ (3 marks)

b) Write a simple program that implements a two dimensional array

(6 marks)

c) Briefly comment on each of the following lines of code. The first line is done for you. Make sure you describe the difference between the last two lines (6 marks)

int x=2; // creates integer x and assigns it value 2

i) int \*p;

ii) p=&x;

iii) \*p=4;

iv) cont p;

v) cont \*p;

vi) cinx;