Inspiring Innovation and Leadership

KARATINA UNIVERSITY
UNIVERSITY EXAMINATIONS
2018/2019 ACADEMIC YEAR

FIRST YEAR YEAR SECOND SEMESTER EXAMINATION

FOR THE DEGREE OF
BACHELOR OF EDUCATION SCIENCE, BACHELOR OF SCIENCE IN INFORMATION SCIENCE AND BACHELOR OF SCIENCE MATHEMATICS MAJOR

COURSE CODE: coM 121

COURSE TITLE: PROGRAMMING CONCEPTS

DATE: 16TH APRIL 2019   TIME: 9:00 - 12:00PM

INSTRUCTION TO CANDIDATES

- SEE INSIDE

Instructions: Answer ALL Questions in Section A and Any Three ill Section B

SECTION A (COMPULSARY)

Question one: (COMPULSORY) 16 MARKS

a)   Define the term paradigm in the context of computer programming. (2mks)

b)   A new student has just joined your class this semester and has been assigned to you to introduce him to basics of computer programming concepts. Explain to him the meaning of the following the terms.

(4mks)

   i)   Compiler
   ii) Pseudo code iii)
   Flowchart iv)
   Syntax

b)   List and explain the FOUR major programming paradigms. (4 mks)

c)   Consider the scenario below and answer the questions that follow:

In a football match, if a player does a mistake which is considered serious by the rule of the game he/she is given a Red card otherwise a Yellow card.

i) Write a pseudocode that can be used to solve the problem. (3mks) ii) Draw a flowchart to represent the scenario. (3mks)

c) Debugging means detecting, tracing, and correcting errors (bugs) in a program. Using appropriate examples explain any two types of programming errors. (2mks)

Question Two: (COMPULSORY) 15 MARKS

a) Analyze the following C program below and re-write it by correcting all the errors present in the program code. (5mks) #include <stdo> main ({ int a == 10; int b = 20; char result; result = a + b; printf(result)

b) Using relevant flowchart diagrams, explain the difference between a while and a do... while loop.   (6mks)

(c) Using relevant code snippets examples demonstrate how C programs implement bifurcations and control jumps in its iteration statements. (6mks)

Section B (39 Marks)

Question Three (13 Marks)

a)   Consider the following variables declared and initialized as shown below.

int x = 12; int y = 15; int z = 20;

Clearly showing your working, determine whether the following expressions are true or false.

i) $< 10)$ $(y>21+4)$ (2mks)
ii) $(x <=5 | I y > 15) \&\& (z<40)$ (2mks)
iii) $(x != 5) \&\& (y == z)$ (2mks)
         $x <= z \&\& (x + y >= z)$ (2mks)

(b) Write a program to display all odd numbers between 53 down to 21 inclusive using a do... while statement. (5mks)

Question Four (13 Marks)

(a)   Write a program that initializes 10 elements of a one dimensional array statically and then computes and displays the mean of elements.(6mks)

(b) The table below shows the grading criteria used at KARATINA University for awarding students grades for marks in various units. Write a program that can be used to grade the marks. (7mks)

MARKS	GRADE
70-100	
60-69	13

50-59	C
0-39	

Question Five (13 Marks)

a) You have opened a clothing shop selling men and women wears. To woo in customers, you have decided to offer your customers discount of 10% . for each of the item purchased in your shop. Write an error free C program which requests the selling price and a discount percent. Your program should print the original price, the discount amount and the amount the customer must pay. (10 ml(S)

(b)   Write C statements to do the following:

    i)   Declare an array MyName of 5 components of type char. (2mks)
    ii)   Set the value of the 9th component of the Exam array to 12 .(2mks)

Ouestion Six (13 Marks)

(a) Distinguish the difference between a multi-line comment and a single line comment in C and illustrate with specific examples, the syntax for writing each of the comments   (4mks)

b) Write a program that incorporates two functions FindArea and FindPeri to calculate and return the area and the perimeter of a rectangle. (9mks)

Question Seven (13 Marks)

a)   Write a program to computer and display the sum and mean of all odd numbers from 53 down to 21 inclusive using a do while.. structure.
                                (5mks)

b)   Explain the syntax for the following control structures as used in C.
        i) if statement.   (2mks)

        ii) for statement.   (2mks)

        iii) switch statement.   (4mks)

Ins