



MACHAKOS UNIVERSITY

University Examinations for 2018/2019

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

..... YEAR SECOND SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE (.....)

SST 202: OBJECT ORIENTED PROGRAMMING I

DATE:

TIME:

INSTRUCTIONS

Answer **question ONE** and any other **TWO** questions.

MACHAKOS UNIVERSITY

BACHELOR OF SCIENCE IN ACTUARIAL SCIENCE

UNIT CODE/NAME: SMA191: INTRODUCTION TO COMPUTER

PROGRAMMING

January – April 2019

End Semester Exam

Time: 2 Hours

Instructions to candidate:

- i. *Answer booklets will be provided*
- ii. *The paper consists of **FIVE** questions*
- iii. *Answer **question one** (COMPULSORY) and any other **TWO** questions*

QUESTION ONE (30 MARKS) (COMPULSORY)

- a) Briefly explain the following terms as used in programming (6 marks)
- i. Syntax error
 - ii. Semantic error
 - iii. Algorithm
 - iv. Pseudo code

- v. Source code
- vi. Object code
- b) Describe the syntax for declaring a constant in C (2 marks)
- c) Differentiate the following: (6 marks)
 - i. Variable and constant
 - ii. Global variable and local variable
 - iii. Compiler and interpreter
- d) State one advantage and one disadvantage of: (2 marks)
 - i. Machine language
 - ii. High-level language
- e) In the output statement: `printf(" the area of circle is 5.2%f\n", Area)`, explain the meaning of `5.2%f\n` (4 marks)
- f) Draw flowchart to find the average of 3 numbers (4 marks)
- g) Explain the three parts of a C Function (6 marks)

QUESTION TWO (20 MARKS)

- a) State and explain **THREE** basic flow control structures in C (6 marks)
- b) Explain the motivation behind the development of C language (2 marks)
- c) Write a C program to find average of three numbers entered by the user through the keyboard (5 marks)
- d) Draw the flowchart symbols used to represent the following: (3 marks)
 - i. Decision
 - ii. Input/output
 - iii. Predefined process
- e) With an appropriate example explain the difference between `x++` and `++x`, where `x` is an integer variable (4 marks)

QUESTION THREE (20 MARKS)

- a) Explain the following:
 - i. With an appropriate example, differentiate between logical and bitwise AND operator (4 marks)
 - ii. The difference between `#include <fileName.h>` and `#include "fileName.h"` preprocessor statements (2 marks)

- iii. Library functions in C and state two examples of the library functions (4 marks)
 - b) With aid of examples explain the difference between “WHILE ” and “DO WHILE ” loops (4 marks)
 - c) Write a C program to print Fibonacci series up to **N terms** using the **FOR** loop.(6 marks)
- NB:**Each Fibonacci number is the sum of the two preceding ones, **i.e.** , $x_n = x_{n-1} + x_{n-2}$.
The first three terms are 0,1,3*

QUESTION FOUR (20 MARKS)

- a) Explain the following terms as used in C Functions (10 marks)
 - i. Static variable
 - ii. Function return type
 - iii. Function declaration
 - iv. Function definition
 - v. Recursive functions
- b) Giving an example in each case, differentiate between pass by value and pass by reference (4 marks)
- c) Write a C program to read a number **n** from the user and find its factorial using recursive function (6 marks)

QUESTION FIVE (20 MARKS)

- a) With aid of examples state and explain the following operators used in C (4 marks)
 - i. Bitwise AND
 - ii. Bitwise OR
 - b) State and justify the output of the following program (4 marks)
- ```
#include<stdio.h>

IntcounterA()
int main()
{
 printf("%d ", counterA());
 printf("%d ", counterA());
 printf("%d ", counterA());
 return 0;
}

intcounterA()
```

```

{
 static int count = 0;
 count++;
 return count;
}

```

- c) Write a C program using **switch statement** which allows a user to enter a digit between **0 and 5** and prints out the digit in words if it is within the range and if not within the range it prints out the word **“invalid”**. For example in the case of digit **1** the program will print **ONE** (7 marks)

- d) State and justify the output of the following C program (5 marks)

```

main()
{
 int alpha = 10, beta = 15, gamma = 35;
 funchange (alpha, &beta, gamma);
 printf ("%d%d%d", alpha, beta, gamma);
}

funchange (int x, int *y, int z)
{
 x = 15; *y = 35; z = 10;
}

```