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**University Examinations 2014/2015**

FIRST YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR DEGREE OF BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY

**BIT 2123: STRUCTURED PROGRAMMING**

 **DATE: OCTOBER 2015 TIME: 2 HOURS**

**INSTRUCTIONS:** *Answer question* ***one*** *and any other* ***two*** *questions*

**QUESTION ONE (30 MARKS)**

1. Describe the following terms:
2. Assembler.
3. Debug.
4. Complier.
5. Interpreter. (8 Marks)
6. Differentiate between a variable and a constant. (4 Marks)
7. Data types are core to programming languages. What do you understand by the term “Data type?” Giving examples explain any four of the main data types supported in C.(4 Marks)
8. Write a program C program that converts temperature from degrees Celsius to Farenheight. Where Farenheight=32+9/5\*Celsius. The program should be presented on the screen in the following format: 15 degrees Celsius is equal to 93.2 degree Celsius. (6 Marks)
9. Different between IF and switch statements used in C programming. (4 Marks)
10. Briefly explain the purpose of the following statements used in C.
11. #include <stdio.h>
12. main () (4 Marks)

**QUESTION TWO (20 MARKS)**

1. Differentiate between the following as used in C programming:
2. || and && operators.
3. = and = = operators. (6 Marks)
4. Write a C program to input student name, Maths, English, Kiswahili marks of 6 students calculating the total and average marks of each student and displaying each student grade as shown below. (6 Marks)

|  |  |
| --- | --- |
| **Marks** | **Grade** |
| Above 80 | A |
| Between 60 and 80 | B |
| Between 40 and 60 | C |
| Below 40 | D |

1. Briefly describe the purpose of the following as used in programming.
2. Editor.
3. Linker. (4 Marks)
4. Write C program to input dimension of a cylinder than calculate volume of the cylinder. where volume  (4 Marks)

**QUESTION THREE (20 MARKS)**

1. Differentiate between syntax and logical errors stating how they can be detected.

 (4 Marks)

1. Briefly explain the following approaches used in programming:
2. Top-down.
3. Bottom-up. (4 Marks)
4. Write a C program to input 3 numbers and display the biggest and the smallest number among the three numbers entered. (6 Marks)
5. The following is a c program segment. Use it to answer the questions that follows:

 num =10;

 n=-1;

 while n<8 do

 {

 num=num+n;

 n=n+1

 }

Trace the values of n and num from num=10 and n=-1 to the last value when n=7. (6 Marks)

**QUESTION FOUR (20 MARKS)**

1. (i) Design a flowchart to calculate are of the shaded part shown below:

 (ii) Write a C program to solve the above problem. (3 Marks)

1. Differentiate between an identifier and a keyword used in C programming and 2 examples in each case. (4 Marks)
2. Write C program that accepts two numbers and operator (+,-,/,\*) computes the result depending on the operator entered, and then output the numbers, operator and the result. (6 Marks)
3. Outline the function of the following C format specifier:
4. %c
5. %f
6. %s
7. %d (4 Marks)

**QUESTION FIVE (20 MARKS)**

1. A company requires a program to enter employee name, hours worked and rate per hour of an employee then calculate basic pay=hours worked multiplied with rate per hour. Tax is calculated on basic pay as follows:

|  |  |
| --- | --- |
| **Basic pay** | **Tax** |
| Over 50000 | 20% of basic pay |
| Between 20000 and 50000 | 10% of basic pay |
| Below 20000 | No discount |

Design a C program that will enable the user to enter the above details and calculate basic pay, tax and net pay=basic pay-tax. (6 Marks)

1. Write a c program that reads the radius of a sphere and calculate the volume. Where volume=4/3  (6 Marks)
2. Give four rules applied when naming an identifier. (4 Marks)
3. Describe two purposes of a compiler. (4 Marks)