



MACHAKOS UNIVERSITY

University Examinations for 2021/2022

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

THIRD YEAR SECOND SEMESTER EXAMINATION FOR

DIPLOMA IN CIVIL ENGINEERING

BCECD 311: COMPUTER PROGRAMMING

DATE: 10/12/2021

TIME: 11.00-1.00 pm

INSTRUCTIONS:

Answer question one and any other two questions

- 1
 - a) State the *differences* between the following terms.
 - i) Variable and Constant.
 - ii) Operator and Operand.
 - iii) identifier and Keyword (6 marks)
 - b) Explain the different types of variables (4 marks)
 - c) Explain any **three** C programming variable Formatters. (3 marks)
 - d) Write a C program that accepts a value through the keyboard. The program should determine if the value entered is an even number or an odd number (7 marks)
 - e) State the reasons why the following identifiers are *invalid*
 - i) value\$sum
 - ii) exit flag
 - iii) 3lotsofmoney
 - iv) char (4 marks)
 - f) Outline any **four** rules that must be followed when creating an identifier (4 marks)
 - g) Define the term Program (2 marks)
- 2
 - a) Explain any **four** Data types used in C programming (4 marks)
 - b) Write a C program that will accept a value representing the radius of a circle. The program should then calculate and display the area of the circle.
NB Use **PIE** as 3.14 (6 marks)

- c) The following is a C program segment. Use it to answer the question that follows.

Main()

```
{  
    int a,b,c,y;  
    b=++a;  
    c=b++;  
    y=b+c;  
}
```

Given that the value of a is 6, evaluate the value of y. (4 marks)

- d) State the differences between *continue* and *break* as used in C programming.

(4 marks)

- e) Identify the difference between the following expressions

i) =

ii) ==

(2 marks)

- 3 a) Outline the methods of *declaring* a constant. (4 marks)

- b) Table 1 shows the main menu of a management information system. Use it to answer the question that follows.

Option	Menu Activity
1	Capture a New Student
2	Edit Record
3	Check Balance
	Close Record

Table 1

Write a C program that would prompt a user to enter an option. The program should then outputs the menu activity. Use the **if** statement (6 marks)

- c) Study the statement below

```
scanf("%d",&number)
```

Explain the purpose of the & sign and %d in the statement above. (4 marks)

- d) Explain any **three** C programming variable Formatters. (6 marks)

- 4 a) Write a C program that will accept two values through the keyboard and calculate their product. (6 marks)
- b) Ufanisi Company limited uses the following information to compute its employees net pay,
 Rate of pay= Ksh 1000 per hour
 Rate of taxation 11%

Write a C program that accepts an employee's name and number of hours worked then computes the net pay and outputs the name, hours worked, gross pay and net pay

Hint:

Gross pay= hours worked *rate of pay

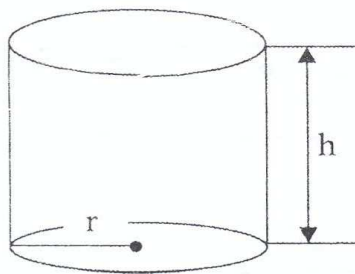
Taxation = gross pay * taxation

Net pay= gross pay – taxation (6 marks)

- c) Distinguish between *or* and *not* logical operators. (2 marks)
- d) Explain the differences between the following terms
- i) Programming Language and a Programmer
 - ii) Syntax and Semantics
 - iii) High level languages and Low level languages (6 marks)
- 5 a) Describe any **four** Operators used in C programming (4 marks)
- b) Explain the meaning of the term **Constant** (2 marks)

- c) The figure below shows an open cylinder. Write a C program that accept the height and radius of the cylinder. The program should determine and output the volume of the cylinder.

Hint: $Volume = \pi r^2 h$ (6 marks)



- d) Explain the different methods of declaring a Constant (4 marks)
- e) Using an example, explain the different parts of a c program (4 marks)