



**TECHNICAL UNIVERSITY**

**OF MOMBASA**

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SCHOOL OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF PURE AND APPLIED

**UNIVERSITY EXAMINATION FOR:**

BACHELOR OF TECHNOLOGY IN INDUSTRIAL MICROBIOLOGY AND BIOTECHNOLOGY (BTMB)

EIT 4154: INFORMATION TECHNOLOGY II.

**END OF SEMESTER EXAMINATION**

**SERIES:** APRIL 2016

**TIME:** 2 HOURS

**DATE:** APRIL 2016

**Instructions to Candidates**

You should have the following for this examination

*-Answer Booklet, examination pass and student ID*

This paper consists of FIVE questions. Attempt question one and any other two questions.

**Do not write on the question paper.**

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**Question ONE**

a. Define the following terms:

- i. Constant
- ii. Algorithm
- iii. structure

(6 Marks)

b. List two rules of naming variables

(2 Marks)

c. Identify errors and correct code in the following program:

```
#include<stdio.h>
```

```
Main()
```

```
{
```

```
float y, int x;
puts( "enter a float, then an int")
scanf("%f,%c",y,x);
printf("\nYou entered %f and %c,y,x);
return 0;
```

(6 Marks)

d. State what each of the following statements does.

- i. int x;
- ii. int y[5];
- iii. m\*=y;

(3 Marks)

e. Distinguish between:

- i. While and do.. while loop
- ii. Function and function prototype
- iii. Constant Pointer and Pointer to constant

(6 Marks)

f. Write a program that accepts temperature in fahrenheit and converts it to celcius through the use of a function named convert(). The program should print the celcius value and if this is greater than 20, the program should print the message "its hot here" otherwise it prints "its cold here". Use the following formula for conversion:

$Celcius = 5/9 * (fahrenheit - 32)$

(7 Marks)

## Question TWO

a. Highlight any three good coding techniques

(3 Marks)

b. Outline three reasons for using pointers in computer programming

(3 Marks)

c. The header file <string.h> contains a number of string handling functions.

With reference to this header file, using an example state the role of the following functions:

- i. strcat()
- ii. strcmp()
- iii. strlen()

(6 Marks)

d. The following details of items are stored in struct: item code, name, price and quantity.

**Required:**

Write a program that uses a structure called “ items” to store the above details. The program should include:

- (i) Declaring the struct
- (ii) Declaring an array instance of the struct called “item” of size 5
- (iii) Inputting details for the 5 items
- (iv) Outputting the above details (8 Marks)

**Question THREE**

- a. Give any three guidelines when flowcharting (3 Marks)
- b. State the meaning of the following Escape sequences:

- i. \t
- ii. \r
- iii. \a (3 Marks)

- c. Explain the stages of program development (6 Marks)
- d. Write a C program using arrays which accepts 10 numbers and calculates their sum and average. (8 Marks)

**Question FOUR**

- a. State the role of comments in a program (2 Marks)
- b. Distinguish between the following file functions
  - i. fprintf() and fscanf() functions
  - ii. putc() and getc() functions
  - iii. fopen() and fclose() (6 Marks)
- c. Outline briefly the steps of developing an algorithm (4 Marks)
- d. A company pays its salesmen commission as a percentage of total sales as shown in the table below:

Total Sales (Sh.)	Commision%
Greater than 10,000 but less than or equal to 100,000	10
Greater than 100,000 but less than or equal to 500,000	15
More than 500,000	20

Otherwise the salesman receive no commission if sales are less than kshs. 10,000 Write a program to carry out the above task using nested- if statement. (8 Marks)

### Question FIVE

a. State the type of error in each one of the following (Runtime, syntax or logical)

- i. Division of a number by zero
- ii. Missing semicolon at the end of a C statement
- iii. Loop executing indefinitely
- iv. Use of undeclared variable
- v. Generation of a negative value
- vi. Data overflow (6 Marks)

b. What is a variable scope? Explain the two types of variable scope (4 Marks)

c. Write a program that uses a loop to sum numbers between 1 and 10 inclusive and then outputs the sum to the screen. The program has no input data. (6 Marks)

d. What are the output of the following section of code ?

(i) `int a, b;`

```
for (a=0; a<3; a++)
```

```
for (b=0; b<=3; b++)
```

```
printf(“%d”,b); (2 Marks)
```

(ii) `int a,b;`

```
for (a=1; a<=4;a++)
```

```
{
```

```
printf(“%d”,a);
```

```
printf(“\n”);
```

```
}
```

(2 Marks)