



TECHNICAL UNIVERISTRY OF MOMBASA

Faculty of Engineering & Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

UNIVERSITY EXAMINATION FOR DEGREE IN:
BACHELOR OF MATHEMATICS & COMPTUER SCIENCE
(BMCS 14S)

EIT 4151: STRUCTURED PROGRAMMING

SPECIAL/SUPPLEMENTARY EXAMINATION

SERIES: JULY 2015

TIME: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer Booklet*

This paper consists of **FIVE** questions. Attempt question **ONE (Compulsory)** and any other **TWO** questions
Maximum marks for each part of a question are as shown

This paper consists of **TWO** printed pages

Question One (Compulsory)

- a) Describe the evolution of the first three (3) generations of languages, giving one example programming language and one distinguishing feature of each generation. **(6 marks)**
- b) Outline TWO advantages of 3rd generation language over 2nd generation one **(4 marks)**
- c) Provide the exact output of the following program **(8 marks)**
- ```
#define TAX 0.18
int main ()
{
 int number = 5;
 float water = 13.5;
 in cost = 25;
 printf ("The %d person bought %f litres of water.\n", number, water);
 printf ("The value of taxation is %f.ln," TAX);
 printf ("%c%ldzn," '$;2*cost);
}
```
- d) (i) Define an array **(2 marks)**  
(ii) Distinguish between a prefix and a postfix operator **(2 marks)**  
(iii) A variable and a constant perform the similar functions when declared in a programme but are fundamentally different. Explain this statement **(2 marks)**

- e) If id has value 1, read values for x and y (both integers), calculate and print the sum of x and y otherwise print the message “id is not 1” **(6 marks)**

### Question Two

- a) Giving a suitable example, differentiate between Global variable and a Local variable **(4 marks)**
- b) Explain the three sections of a for loop **(6 marks)**
- c) Write a program that uses a for loop to add the odd numbers from 1 to 99. Then print out the result **(10 marks)**

### Question Three

You work as a marketer for a software retail company. Your suppliers are software development companies and your products are very popular with your customers. Your sales manager gives the directive that at any time during the day she will need to know:

- (i) How many brands of the software have been sold
- (ii) The value of the most expensive brand of software sold
- (iii) The value of the least expensive brand of software sold
- (iv) The average value of software sold

Draw a flow chart to resolve this problem **(20 marks)**

### Question Four

- a) Write a simple timetabling program that asks the user to type in the number of students that are expected to be in class not counting the lecturer, assuming that the number typed in is n, display the message that says “A classroom for (n + 1) is available” “For example, if the user types 30, display “A classroom for 31 is available” **(10 marks)**
- b) Modify the timetabling programme in (a) to display an error message if the number is students is more than 50 **(10 marks)**

### Question Five

- a) Give the meaning of the following format specifiers:  
(i) %d  
(ii) %f  
(iii) %c  
(iv) %if  
(v) %s **(5 marks)**
- b) Write a function using parameter passing that performs the addition of three integer numbers and returns an integer result **(5 marks)**
- c) (i) Given an array arr (5) = {24, 67, 27, 18, 70} Give the values of the following subscript positions:

| Subscript | Value |
|-----------|-------|
| Arr (1)   | ?     |
| Arr (4)   | ?     |

(ii) Show how you can sum the contents of a two dimensional array:

my – array (2) (3) using a loop

(5 marks)