



THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

Faculty of Engineering & Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

HDIP WITH BRIDGING

&

DIT MODULE I

END OF SEMESTER EXAMINATIONS

APRIL/MAY 2010 SERIES

STRUCTURER PROGRAMMING (PASCAL)

TIME: 2 HOURS

Instructions to Candidates

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Question ONE

- (a). Explain the machine programming language giving advantages & disadvantages. **(6 Marks)**
- (b). Explain the difference between Procedural and Non-procedural languages. **(4 Marks)**
- (c). (i). State any **TWO** program design tools. **(2 Marks)**
- (ii). Draw a program flow-chart to read twenty integer values then calculate sum and average. Implement using the while loop. **(10 Marks)**
- (iii). State **ONE** objectives of drawing program flowchart.

Question TWO

- (a). (i). Explain the difference between compiler and interpreter. **(4 Marks)**
- (ii). Draw a program flowchart to print the first **TEN** natural numbers and their corresponding squares i.e.

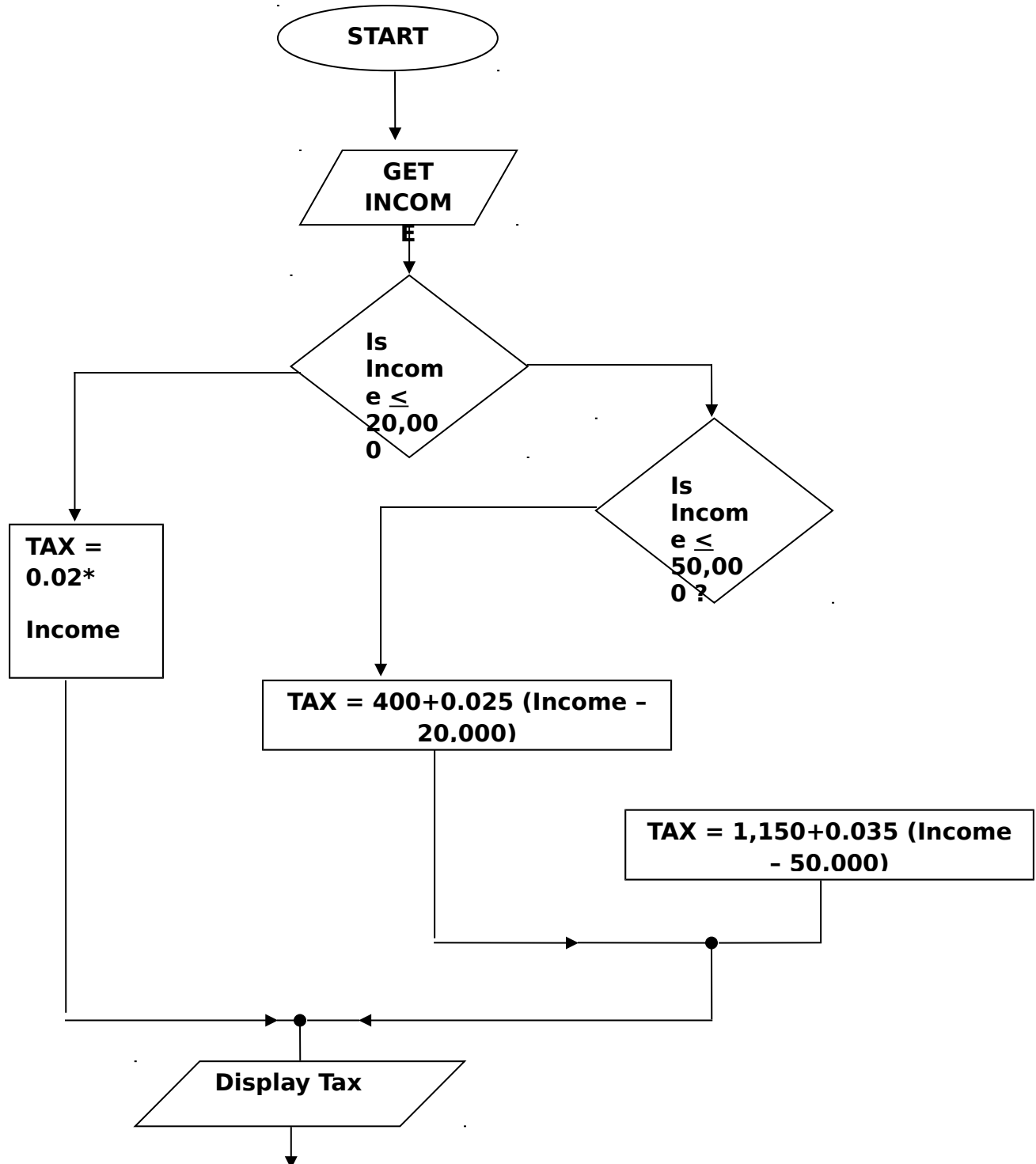
Number	Square
1	1
2	4
3	9
4	16
.	.
.	.
10	100

(8 Marks)

- (iii). Implement the Q1(a).(ii). above using pascal programming language. **(8 Marks)**
- (b). State any **THREE** high level programming languages. **(3 Marks)**

Question THREE

- (a). The flowchart below calculates income tax. Write a pascal program corresponding the flowchart.



END

(13 Marks)

(b). Explain any **FIVE** reasons for learning several programming languages.

(10 Marks)

Question FOUR

(a). Draw a program flowchart to calculate the value of x in a quadratic equation given.

$$ax^2 + bx + c = 0$$
$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Suppose the following **THREE** conditions:

(i). If $b^2 - 4ac = 0$

(ii). If $b^2 - 4ac \geq 0$

(iii). If $b^2 - 4ac < 0$

(10 Marks)

(b). Implement the Q4(a) above using Pascal programming.

(10 Marks)

(c). State any **THREE** relational operations used with pascal programming.

(3 Marks)

Question FIVE

(a). (i). Explain the term modular programming.

(2 Marks)

(ii). Explain the term recursion as used in programming.

(2 Marks)

(iii). Develop a pascal program having function to calculate factorial of a number recursively. Given:

$$0! = 1$$
$$1! = 1$$
$$n! = n * (n - 1)!$$

(7 Marks)

(b). Explain the following terms:-

- (i). Local variable
- (ii). Global variable
- (iii). Variable parameters
- (iv). Value parameters

(8 Marks)

- (c). Explain the difference between procedures and functions. **(4 Marks)**