STRUCTURED PROGRAMMING (BBIT 222) (CISY 111) 1ST TRIMESTER 2014

**KENYA METHODIST UNIVERSITY**

**END OF 1'***ST '***TRIMESTER 2014 (EVENING) EXAMINATION**

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| **FACULTY** | |  | : | COMPUTING & INFORMATICS |
| **DEPARTMENT** | | | : | COMPUTER SCIENCE AND BUSINESS |
|  |  |  |  | INFORMATION |
| **UNIT CODE** | |  | : | BBIT 222/CISY 111 |
| **UNIT TITLE** | | | : | STRUCTURED PROGRAMMING |
| **TIME** |  |  | : | 2 HOURS |

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Instructions: Answer question one and any other two.

**Question One**

|  |  |  |  |
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| * Explain three selection structures used in C++. |  |  | (3mks) |

* Define the following terms as used in arrays
* Array
* Index

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| * Size |  |  |  |  |  |  |  |  | (3mks) |
| * Declare an array of size five to store and compute the sum of exam scores of five students. |  |  |  |  |  |  |  |  | (2mks) |
| * Write a C++ code to implement the above array. | | | | | | |  |  | (5mks) |
| * State five advantages of structured programming | | | | | | |  |  | (5mks) |
| * Differentiate between pass by value and pass by reference as used in functions. |  |  |  |  |  |  |  |  | (4mks) |
| * Write a C++ program to get the sum of two integers passing values by reference. |  |  |  |  |  |  |  |  | (5mks) |
| * Outline three logical operators | | | |  |  |  |  |  | (3mks) |

**Question Two**

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| * Distinguish between the while do and do while loops. Use illustrations. |  |  |  |  |  |  |  |  |  |  |  | (4mks) |
| * Write a program to find the sum of the odd numbers between 0 and 10. Use both while do and do while loops. |  |  |  |  | (4mks) | | | | | | | |
| * Explain five basic data types used in programming. | | | | | | | | | |  |  | (5mks) |
| * Draw a flowchart and write a C++ program that receives an integer and returns its factorial. Use functions. |  |  |  |  | (7mks) | | | | | | | |

**Question Three**

* Write an algorithm for a program to input the basic salary of an employee, his grade and mode of transport (i.e whether by personal car or by bus). The program computers the net pay as follows:

Allowances: computed as follows

* House: 35% of basic salary
* Transport:
* 10,000 for those with personal cars
* For those who use bus
* 2000 for grades 1 – 2
* 3000 for grades 3 – 5
* 4000 for grades 6 on wards

Tax is also calculated as follows

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| Salary range |  |  |  |  | tax |
| Less than 10000 |  |  |  |  | no tax |
| At least 10000 but less than 30000 | | | |  | 10% |
| At least 30000 but less than 100000 | | | | | 13% |
| At least 100,000 |  |  |  |  | 16% |

Note:

* Tax is a percentage of basic pay

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| * Net pay = basic pay + allowances \_ tax |  |  |  | (10mks) |
| * Write the above program in (a) using C++. |  |  |  | (10mks) |

**Question Four**

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| * Explain stages of program development. |  |  |  | (10mks) |

* Explain the meaning of the terminologies of functions
* A function prototype
* A global variable
* A local variable
* Returning a value
* Non void function

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| * Explain how the above in (a) are written. |  |  |  | (5mks) |

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