# THE KENYA POLYTECHNIC UNIVERSITY COLLEGE

---

## DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

## HIGHER DIPLOMA IN ELECTRICAL ENGINEERING

## END OF YEAR II EXAMINATIONS

## NOVEMBER 2007

# COMPUTER APPLICATIONS

## 3 HOURS

**INSTRUCTIONS TO CANDIDATES:**

You should have the following for this examination:

      Answer booklet

      Non-programmable calculator/ New Mathematical tables

Answer any FIVE of the following EIGHT questions.

All questions carry equal marks and the maximum marks for each part of a question are as shown.

This paper consists of **3** printed pages.

1. (a) Describe FOUR areas of society in which computers are used. (4 marks)

   (b) State and describe any FOUR types of task-oriented software. (4 marks)

   (c) Explain the various classifications of computers. (8 marks)

   (d) Differentiate among any FOUR types of Microsoft Windows operating system software. (4 marks)

2. (a) Distinguish the following:

   (i)     Data and information

   (ii)    Operating system and application software (4 marks)

   (b) Describe the basic components of a computer. (8 marks)

   (c) Explain how the central processing unit executes program instructions. (5 marks)

   (d) Explain the meaning of 'volatility' as used in memories and provide examples. (3 marks)

3. (a) Explain the THREE primary factors that determine the time needed to access data directly on a disk storage. (6 marks)

   (b) Discuss the benefits of secondary storage. (8 marks)

   (c) Explain THREE methods of file organization. (6 marks)

4. (a) Distinguish between transaction and batch processing. (4 marks)

   (b) Draw and explain the function of any FOUR flow chart symbols. (4 marks)

   (c) Using a simple program module distinguish between global and local variable scope as used in C++ programming. (6 marks)

   (d) Describe any SIX data types used in C++ and for each case give an example of how it is used in a program. (6 marks)

5. (a) Distinguish the following as used in programming:

   (i)     Logical and syntax error

   (ii)    Program and algorithm (4 marks)

   (b) Using simple programs in C++ the nature and outline the difference between if and if… else conditional structure. (5 marks)

(c) Study the following program in C++. Determine the errors and rewrite the program including all the corrections.

```
/ operating with variables
# include <10stream.h>
// declaring variables
int a, b;
int result;
// process
a=5;
b=2;
a=a+1;
result;
// print out the result
cont << result;
// terminate program
return;
}
```

(d) A program requires that two integers are multiplied and the product reduced by integer number 2. The result from this process is required to be output. Draw the flowchart that solves this problem.        (5 marks)

6.  (a) Explain any TWO areas in real life where high level programming can be applied.        (4 marks)

   (b) Explain what the following program code does and stet the result it will produce if it is executed.        (5 marks)

```
#include <10stream.h>
int main () {
int n;
 for (n=10; n>0; n--) {
      cont << n << ", ";
          if (n = = 3)
              {
              Cont << " countdown aborted! ";
              break;
              }
       }
     return ø;
     }
```
        (5 marks)

(d) Write the algorithm and program in C++ that allows user input of two integers and calculates the sum. (6 marks)

7. (a) Distinguish between the following:

    (i)    Network file systems and disk file systems.

    (ii)    Serial and parallel interface (4 marks)

(b) Describe FOUR basic sections of the FAT file system. (8 marks)

(c) Discuss the performance measures of disk storage devices. (8 marks)

8. (a) Explain the purpose and demonstrate through program module/code how switch selective structure is used. (4 marks)

(b) Using a function, write a simple program in C++ that obtains and displays the sum of two integer numbers. (5 marks)

(c) Explain the following types of data storage used in a computer system:

    (i)    Cache             (ii)    Main memory

    (iii)    Flash memory (5 marks)

(d) Explain the process or steps involved in developing a program or software. (6 marks)