NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY
FACULTY OF APPLIED SCIENCE
COMPUTER SCIENCE DEPARTMENT
DECEMBER 2002 EXAMINATIONS

SUBJECT: INTRODUCTION TO COMPUTERS
           ENGINEERING STUDENTS
CODE: SCS 1101

<u>Instructions to candidate:</u>

1.   Answer any 5 questions.

3 HOURS

QUESTION ONE

a)   Distinguish between data and information.   [3]

b)   List and explain the different types of software.   [6]

c)   What is a program?   [3]

d)   Compare and contrast the following:-

    (i)   Compiler,

    (ii)   Assembler,

    [iii] Interpreter

                         [8]

QUESTION TWO

a)   Explain the evolution of computers.   [6]

b)   Explain the following terms:-

    (i)   Supercomputer,

    (ii)   Mainframe,

    (iii) Minicomputer,

    (iv)   Microcomputer.

                         [8]

c)   What are the meanings of analog and digital in the context of computing?

                         [6]

QUESTION THREE

a) Explain four functions of an operating system. [6]

b) List and explain the following MS-DOS commands including the syntax for each:-

    (i)   ATTRIB,
    (ii)   CHDIR,
    (iii) MKDIR,
    (iv) TYPE.
[8]

c) Discuss the purpose of a real time executive. [6]

QUESTION FOUR

a) Name the different buses in a computer system and explain their roles. [6]

b) Using a detailed diagram, explain the workings of a microcomputer. [8]

c) What are ROM, RAM and Registers? Fully explain their roles in a computer system. [6]

QUESTION FIVE

a) Explain the characteristics of an algorithm. [6]

b) Explain the various symbols used on writing flowcharts. [4]

c) What is the purpose of flowcharts and pseudocode? [2]

d) How would you represent the following control structures using flowchart symbols? Give an example in each case.

    (i)   If statement

    (ii)   For loop

    (iii) While loop

    (iv) Do-while loop

[8]

QUESTION SIX

a) Write a C program which uses a function to evaluate the factorial of n.

$$N! = N(N-1)\ldots 1$$

[10]

b) Write a C program which uses a user defined data type to represent complex numbers, and an appropriate function to evaluate the product of two complex numbers.

[10]

QUESTION SEVEN

a) Write a C program which accepts N numbers into a one dimensional array of 100 floats. The output of the program should be the average of the N numbers.

[10]

b) Write a C program which inputs the data for two 3x3 matrices and produces the 3x3 sum as well as the 3x3 difference as outputs.

[10]

END OF QUESTION PAPER

GOOD LUCK!