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

SUBJECT: OBJECT ORIENTED PROGRAMMING
CODE: SCS 5101

Instructions to candidate:

Answer all questions from Section A and any 3 from Section B.

3 HOURS

SECTION A

QUESTION ONE

(i) a) What is the difference between:- #include <filename> and #include
       "filename"?   [1]
   b) What is the difference between these constants 7, '7' and "7" [1]
   c) What is the format of a function, ie what parts constitute a
       function?   [3]

(ii)   Locate the errors if any, in the following sub programs.

a) a=1
```
while (a< = 5) {
    {while (b< = a)
         printf("%d\n", a);
         b = b + 1:
    }
    a = a + 1
}
```
                                                                          [2]

b)
```
struct record {
     loop : integer;
     word : array (4);
     sum : real;
} rec1;
```
                                                                          [1]

c)
```
struct record {
int loop;
char x;
       }
loop.record = 10;
```
                                                                          [2]

d)
```
#define J 10
main ( )
{   int j ;
    j = 20;
    printf("%d",j;);
}
```
                                                                          [2]

e) if (sum=10) && (total <> 'x')
  printf ("incorrect")   [2]

f) count = 1
 while (count<=10)
  {printf ("%d", & count);
  count = count +1 ;
  }

g) char trial( )
  { char c;
     c = getchar ( )! = EOF;
     return c;
  }   [1]

h) main( )
 {char xzy [b];
 xzy = "Brother";
 printf(xzy);
 }   [1]

i) main( )
 {
 char array1[2,4];
 char array2[7];
 strcpy(array2, array1);
 }   [1]

j) main( )
 { char people[ ];
 people = "Their names";
 printf("%s", people);
 }   [1]

QUESTION TWO

(i) If we say:
 int i = 5;
 int ip = &i;

a) What is the value of ip   [1]
b) What is ip++;   [1]
c) What is the relationship between a pointer and array in C?   [1]
d) If p is a pointer, what does p[i] mean?   [1]
e) What is a preprocessor directive   [1]

(ii)
a) Show the different ways in which you can store a character string into an array.   [5]
b) With the aid of an example code, describe the different ways in which data is passed between functions.   [5]

(iii)

a) What is the difference between the break and continue statements? [1]
b) What are times loops? [1]
c) What is the format of a structure? [2]
d) What is the definition of a string in C? [1]

SECTION B

QUESTION THREE

a) An integer number is said to be a perfect number if its factor, including one (but not the number itself), sum to the number. For example, 6 is a perfect number because 6=1+2+3. Write a program to determine if parameter number is a perfect number. This method should display all the perfect numbers between 1 and 10 000. [10]

b) Write a program that read its input, 'one line at a time', and prints each line backwards. [10]

QUESTION FOUR

a) Write a program to sort numbers in ascending order. [10]

b) Write a function to compute the factorial of a number entered. [10]

QUESTION FIVE

a) Write a program which computes the average and standard deviation of a series of numbers. [10]

b) Write a program to read text and print each line in the text backwards using **pointers.** [10]

QUESTION SIX

a) Write a function which counts the number of times a character appears in a string using pointers. [10]

b) Write a function to find a substring in a large string and replace it with a different substring. [10]

QUESTION SEVEN

a) A palindrome is a word or phrase spelt the same way forward and backward e.g OTTO. Write a C program that asks the user for a phrase and tests to see if it is a palindrome. [10]

b) Write a program that creates a telephone directory file that has the following data: names, addresses, phone numbers and ages. The program should then read and print the data you created. [10]

END OF QUESTION PAPER

GOOD LUCK!