ECE

S.B. Roll No._____

COMPUTER PROGRAMMING AND ITS APPLICATIONS
3rd Exam/ECE/6160/May'09

Time 3 hours   Max marks =75

Q.1   Choose the correct or best alternative in the following: (1.5*10)

i   Literal means
     a) a string.
     b) a string constant.
     c) a character.
     d) an alphabet.

ii.   Choose the correct answer
     a) Casting refers to implicit type conversion.
     b) Coercion refers to implicit type conversion.
     c) Casting means coercion.
     d) Coercion refers to explicit type conversion.

iii. printf ("%d", printf ("tim"));
     a) results in a syntax error
     b) outputs time
     c) outputs garbage
     d) outputs tim and terminates abruptly

iv.   Output of the following program fragment is
     x = 5;
     y = x++;
     printf("%d%d"; x, y);
     a) 5, 6   b) 5, 5
     c) 6,5   d) 6,6

v.   The value of an automatic variable that is declared but not initialised will be
     a) 0   b) -1
     c) unpredictable b) none of these

vi.   Consider the following program
     main ( )
     {   float a = 0.5, b = 0.7;
          if (b < 0.8)
          if (a < 0.5) printf("ABCD");
               else printf ("PQR");
               else printf ("JKLF");
     }
     The output is
     a) ABCD   b) PQR
     c) JKLF   d) None of these

vii. The following program fragment
     int *a;
     *a= 7;
     a) assigns 7 to a
     b) results in compilation error

c) assigns address of a as 7
d) segmentation fault

viii. A pointer variable can be
     a) passed to a function as argument.
     b) changed within function.
     c) returned by a function.
     d) assigned an integer value.

ix.   The 4-bit binary number 0111 represents
     a) 15   b) -7
     c) 7   d) -1

x.   A byte corresponds to
     a) 4 bits   b) 8 bits
     c) 16 bits   d) 32 bits

Section B

Note : Attempt any five parts. Each question carries 6 marks

Q.2a. Write a C program that reads a fixed point real number in a character array and then displays right most digit of the integral part of number.   (6)

b.   Output the number x = 56.1624 under the following format specification
     (i)   printf("%7.2f", x)
     (ii) printf ("%f', x)
     (iii) printf("8.2e", x)
     (iv) printf("%e", x)   (6)

c.   Write a C program that uses 'for' construct to find the sum of the following harmonic series for a given value of n and display the sum.
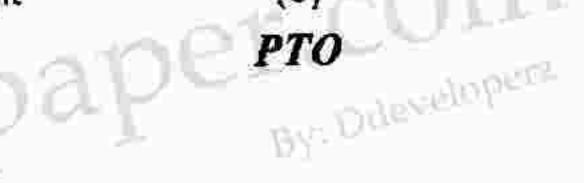   1 + 1/2 + 1/3 +... + 1/n   (6)

d.   Write a C program fragment using "do... while" construct to print out even numbers between 10 to 100 making sure that two numbers are written per line   (6)

e.   Given an integer, write a C program that displays the number as follows
     first line   : All digits of integer
     second line : all except first right most digit
     third line   : all except two light most digits

     last line: left most digit   (6)

PTO

f. Describe the output of the following C program fragment

```
main ()
{   int k. = 0, x = 0;
while (k < 25)
{    if (k % 5 == 0)
    {   x +=k;
        print f("%d ", x)
    }
++k;
{
printf("\nx=%Jd ", x + k);
}
```
(6)

Section C

Note : Attempt any three questions

Q.3a. Write a C program to compute the value or sin function. The loop must terminate when the absolute

value of the term is less than 0.00001.

$\sin x = x - x^3/3! + x^5/5! - x^7/7! + ...$ (6)

b. Write a switch statement that will examine the value of an integer variable flag and print the following messages: (4)
It is hot weather; if flag has value 1
It is a stormy weather; if flag has value 2
It is sticky weather; if flag has value 3
It is a pleasant weather; otherwise

Q.4 a. Define a structure named' student' containing two fields 'name' and 'marks'. (2)

b. Declare an array of structure having 50 elements of student type. (2)

c. Write an input statement for inputting the marks and the names of 50 students defined as above. (2)

d. Write a complete C program to compute and print the names of those students who have got more than 80 marks. Also print their marks along with their names. (4)

Q.5 a. Write a recursive function in C to compute the value of x^n where n is a positive integer and x has a real value. (5)

b. Write a function 'exchange' to interchange the values of two variables say x and y. Illustrate the use of this function in calling program. Assume that x and y are defined as global variables. (5)

Q.6 a. Write a C function that returns 1 if the argument is a prime number and returns 0 otherwise. (5)

b. Write a C function for searching an element in an array of size N. Assume that elements in array are stored in ascending order. (5)