B. Tech.

(SEM. II) THEORY EXAMINATION 2011-12

COMPUTER CONCEPTS AND PROGRAMMING IN C

Time : 3 Hours   *Total Marks : 100*

Note : Attempt *all* sections.

SECTION—A

1. This section contains *one* question of **ten** parts. Attempt **all** parts. Each part carries equal marks.   **(10×2=20)**

   (a) What do you mean by programming ? Explain the efficient programming.

   (b) What do you mean by an algorithm ? Explain the properties of algorithm.

   (c) What will be the output of following code :

   ```
   main( )
   {
   float me = 1.1;
   double you = 1.1;
   if(me = = you)
   printf("I LIKE C");
   else
   printf("I LIKE JAVA");
   }
   ```

   (d) What are the main principles of recursion ?

   (e) Discuss basic file handling functions.

(f) Define the function of a C preprocessor.

(g) Write a short note on GOTO statement.

(h) Write the output of the following code with explanation :

```
main( )
{
char *str1 = "abcd";
char str2[] = "abcd";
printf("%d%d%d", sizeof(str1), sizeof(str2), sizeof("abcd"));
}
```

(i) Differentiate between while and do-while statements.

(j) Predict the output/error of the following code :

```
main( )
{
static int var = 5;
printf("%d", var--);
if(var)
main( );
}
```

SECTION—B

2. This section contains *one* question of **five** parts. Attempt any **three** parts. Each part carries equal marks :   (10×3=30)

(a) (i) Discuss the different symbols used in flow chart. And draw a flowchart to find the factorial of the given number.

(ii) Discuss about the generation of computers along with its advantages and disadvantages.

(b) (i) Discuss the goals of operating system.

(ii) Discuss about arithmetic operators and relational operators.

(c) Write short note on the following :

(a) Keywords

(b) Constants

(c) ASCII code

(d) getch( )

(d) Define the various storage class in C. Explain each with suitable examples.

(e) Convert the following :

    (a) $(623)_8 = (\,?\,)_2$

    (b) $(D3B)_{16} = (\,?\,)_2$

    (c) $(10011011)_2 = (\,?\,)_{16}$

    (d) $(0.11)_2 = (\,?\,)_{10}$

    (e) $(41)_{10} = (\,?\,)_{10}$

SECTION—C

3. Answer *all* questions in this section. Attempt any **two** parts from each question :   **(10×5=50)**

  (a) Differentiate between :

    (i) System Software and Application Software

    (ii) Compiler and interpreter.

  (b) Write a program in C to read a five digit number if it is even then add up the digits otherwise multiply them and print the result.

  (c) What do you understand by pointer to pointer ? Also discuss its advantages and disadvantages.

4.   (a) What is the advantage of switch statement over if-else statement ? Write a program in C using switch statement to find the value of Y for a given value of N between 1 to 4 :

If $N = 1$	$Y = (ax + b)^2$
If $N = 2$	$Y = ax^2 + b^3$
In $N = 3$	$Y = -ax + b$
If $N = 4$	$Y = a^2 + x$

  (b) Write a program in C language to generate the given series upto term less than 200.

    $1 - 4 + 9 - 16 + 25 - \ldots\ldots\ldots$

  (c) What are the different ways of passing parameters to the function ? Explain with example.

5. (a) Write a program in C to read the age of 100 persons and count the number of persons in the age group 50 to 60. Use *for* and *continue* statements.

   (b) Write a program in C to determine whether a given number is 'odd' or 'even' and print the message :

   NUMBER IS EVEN

   or

   NUMBER IS ODD

   without using else option.

   (c) What do you mean by data structure ? Also write a program to create a linear linked list interactively and print out the list and the total number of items in the list.

6. (a) What is dynamic memory allocation ? Also write a program using pointers to read in an array of integers and print its elements in reverse order.

   (b) What do you mean by two-dimensional array ? Write a program to compute the sum of diagonal elements of a square matrix.

   (c) What is a structure ? Also write a program to store the records in a hotel as *customer name, address, period of stay, room allotted* and *room charges.*

7. (a) What do you mean by strings ? State some library functions for strings manipulation. Also create a function in C to find the length of the string.

   (b) What do you mean by searching ? Write a program in C to sort the elements of an array in ascending order using selection sort.

   (c) Explain the functions used for reading and writing operation on file. Also write a program to read 1 to 100 and write even number in a file (even.dat) and odd numbers in a file (odd.dat).