(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 1602 Roll No. | | | | | | | | | | |

B. Tech.

(SEMESTER-II) THEORY EXAMINATION, 2011-12

COMPUTER CONCEPTS & PROGRAMMING IN C

Time : 3 Hours] *[Total Marks : 100*

Note : Attempt **all** the Sections.

Section – A

1. Attempt **all** the parts. . **10 × 2 = 20**
   (a) In C-programming what will be the value of r if r = p % q where p = –17 and q = 5 ?
   (b) Write down any four characteristics of a good programming language.
   (c) Explain the difference between
   const char *p and **char const *p**
   (d) What is the meaning of scope of variable ? Give various types of scope in 'C' programming.
   (e) Give the for loop statement to print each of the following sequence of integers :
   (i) 1, 2, 4, 8, 16, 32
   (ii) –4, –2, 0, 2, 4
   (f) What is conditional compilation and how does it help a programmer ?
   (g) In C-programming what will be the output of the following code ? Explain your answer.

```
main( )
{
printf("\nab");
printf("\bsi");
printf("\rha");
}
```

   (h) What are preprocessor directives ? What is the difference between the following directives ?
   # include <studio.h> and **# include "studio.h"**
   (i) Describe the two ways of passing parameters to functions. When do you prefer to use each of them ?
   (j) In C–programming what will be the outputs of the following code ? Explain your answer.
   printf("%d", strcmp("push", "pull"));

Section – B

2. Attempt any **three** parts in this section. **3 × 10 = 30**

(a) Differentiate between the following :

(i) High level language and low level language.

(ii) Compiler and interpreter.

(iii) Logical error and run time error.

(iv) Algorithm and flowchart.

(b) (i) Write a program in 'C' in which values of variables x,y,z are input by user, then their values are rotated such that x has value of y, y has value of z, z has value of y.

(ii) Write a program in 'C' where user input a five digit positive integer and then display it as per example shown :

Example : Suppose input number is 24689 and it is to be displayed as

2 4 6 8 9	in first line
4 6 8 9	in second line
6 8 9	in third line
89	in fourth line
9	in fifth line

(c) Explain in detail about all the types of loops and conditional statement exist in 'C' programming language.

(d) Write a program in 'C' to read a (5×4) matrix using array and to calculate the following :

(i) Sum of the elements of the third row of the matrix.

(ii) Sum of all the elements of the matrix.

(e) Write algorithm and function program to sort an array of integer into descending order, where the size of array is input by user.

Section – C

Attempt **all** questions in this section.

3. Attempt any **two** parts. **5 × 2 = 10**

(a) What is an operating system ? Give name of any four operating systems. Write any five important features of any one type of operating system.

(b) For a digital computer explain briefly the following :

(i) Cache memory

(ii) Control unit

(iii) ALU

(c) Perform the following :

(i) Convert $(999)_{10} \rightarrow (\ )_{16}$

(ii) Convert $(11011101)_2 \rightarrow (\ )_8$

(iii) Convert $(786)_{10} \rightarrow (\ )_{BCD}$

(iv) Find Two's complement of the number **1100100**.

(v) Write the decimal value of Two's complement obtained in **(iv)**.

4. Attempt any **one** part. **1 × 10 = 10**

(a) Explain in detail about the following :

(i) Fundamental data types in 'C' language, mentioning their range, space they occupy in memory and keyword used for their representation in programming.

(ii) Four storage class in 'C', mentioning their place of storage, default initial value, scope and life of each of them.

(b) Complete the following table regarding the operators available in 'C' language.

S.No.	Name of Operator	Symbol of Operator	Purpose	Precedence Rank
1.	Increment			
2.	Address			
3.	Modulus			
4.	Addition			
5.	Right Shift			
6.	Greater than			
7.	Bitwise AND			
8.	Logical OR			
9.	Conditional Expression			
10.	Assignment operator			

5. Attempt any **two** parts : **2 × 5 = 10**

(a) Write a program in 'C' using switch statement to find the value of y for particular value of N. The value of a, x, b, N are to be input through keyboard by user.

IF N = 1 y=ax % b

IF N=2 $y=ax^2 + b^2$

If N=3 y= –bx

IF N=4 y=a + x/b

(b) Explain what is likely to happen when the following situations are encountered in a program.

(i) Actual arguments are less than the formal arguments in a function.

(ii) Data type of one of the actual arguments does not match with the type of the corresponding formal argument.

(iii) The order of actual parameters in the function call is different from the order of formal parameters in a function where all the parameters are of the same type.

(iv) The type of expression used in **return** statement does not match with the type of the function.

(c) Write a program in 'C' to print the following :

1

2 2

3 3 3

4 4 4 4

5 5 5 5 5

6. Attempt any **one** part. $1 \times 10 = 10$

(a) Define a structure called **cricket** that will describe the following information :

player name

team name

batting average

Using **cricket**, declare an array **player** with 50 elements and write a program to read the information about all the 50 players and print a team-wise list containing names of players with their batting average.

(b) Explain the following :

(i) Dynamic memory allocation.

(ii) **malloc** and **calloc**.

(iii) Stack.

(iv) Linked list.

7. Attempt any **one** part. $1 \times 10 = 10$

(a) Write a program which will read a string and rewrite it in the alphabetical order. For example the word **STRING** should be written as **GINRST**.

(b) Given high level I/O functions for file management in C, complete the following table.

S.No.	Function Name	Operation	Syntax of function
1.	fopen()		
2.	getc()		
3.	putc()		
4.	fprint()		
5.	getw()		
6.	putw()		
7.	fseek()		
8.	ftell()		
9.	fscanf()		
10.	rewind()		