DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD – 402 103
Summer Semester Examination, May 2018

Branch: B. Tech.	Semester: II
Subject with Subject Code: Basic Computer Programming [ICT206]	Marks: 60
Date: 25 / 05 / 2018	Time: 3 Hrs.

Instructions to the Students:

1] Attempt **any 5 Questions**. Each Question Carry **12 Marks**.
2] Figures / Structures to the right indicate full marks.
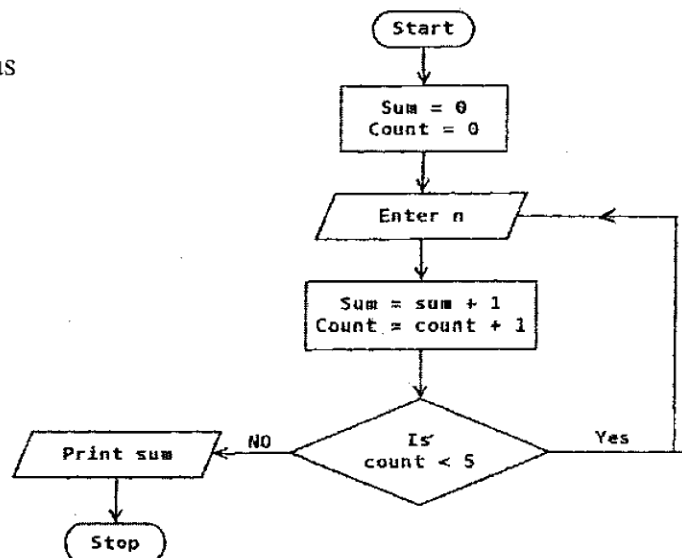3] Assume suitable data, if necessary.

Q. No. 1 Attempt the following:

A) Write the commands to compile and to execute a program in Linux environment. Write **[4]** the name of file is created as programmer successfully compile the program?

Solve the following expression. What will the value store in result variable?
```
int x = 1, y = 5, z = -2, result;
result = -x + (z + y * (z + x) / z - y / x) + x - y / 2;
```

B)

Write a C code for flowchart as shown in figure below.   **[4]**

C) Write an algorithm to calculate the factorial of a number (N). Verify your result by a trace **[4]** table by assuming N = 5.

Hint: The factorial of N is the product of numbers from 1 to N.

Q. No. 2 Attempt the following:

A) Write a program that take input as a time in seconds from user and print the output in the **[4]** form **HH:MM:SS**.
```
For eg:
      Input: 7907
      Output: 2:11:47
```

B) With the help of suitable example, explain any four the Logical Operators in C. **[4]**

OR

B) With the help of suitable example, explain any four Arithmetic Operators in C. **[4]**

C) Enlist the hierarchy of Data Types in C. Also write the amount of size required to store **[4]** the basic data types in the memory.

Q. No. 3 Attempt the following:

A) Consider the program given below: **[4]**
```
int main() {
        int a = 6;
        int b = 6;
        int lamp, light;
        lamp = 5*a + 2*b;
        light = 4*a + 8*b;
        while(lamp < light) {
                lamp = lamp + 4;
                light = light - 2;
        }
    return 0;
    }
```

How many times does the while loop execute? What will the value of 'lamp' and 'light' variable in each iteration?

B) Write a main() program that first asks the user for an integer, N, and then calculates three **[4]** sums: the sum of the even integers, the sum of the odd integers, and the sum of all integers from 0 to N. The output of the program is:
```
Enter n: 7
Sum = 28, Sum of Odd = 16, Sum of Even = 12
```

C) Give the generalize syntax for the *do....while, while, if...else,* and *for* loop constructs. **[4]**

OR

C) Write the program using Switch Statement which takes an arithmetic operator +, -, *, / **[4]** and two operands from the user as an input and performs the calculation on the two

operands depending upon the operator entered by the user and display the result as an output on Screen.

Q. No. 4 Attempt the following:

A) Differentiate between the static and automatic storage type of variable with respect to the following points:
Storage, Default Initial Value, Scope of variable and Life of variable. **[4]**

B) What do you mean of the function in C? Define the recursion. Give the proper syntax for function prototype and function definition. **[4]**

C) What is the output of following code? **[4]**

```
#include"stdio.h"

void foo(int n, int sum){
        int k = 0, j = 0;
        if (n == 0) return;
        k = n % 10;
        j = n / 10;
        sum = sum + k;
        foo (j, sum);
        printf ("%d,", k);
}

int main (){
        int a = 204, sum = 0;
        foo (a, sum);
        printf ("SUM=%d\n", sum);
        getchar();
}
```

Q. No. 5 Attempt the following:

A) Write a program in C that takes two matrices of size 3 X 3 as in input from the user. Same program performs addition and subtraction of two matrices and display the result of addition and subtraction to the user. **[4]**

B) User want to enter 25 numbers of the same kind. Which data type would you like to suggest to use to a programmer to receive input from user through keyboard. Further write the code or program in C that find sum and average of 25 numbers entered by user and display the result i.e. sum of 25 numbers and average of 25 numbers on the screen. **[4]**

C) Define an Array? Define String in C? How to declare and initialize strings in C, give an example? **[4]**

Q. No. 6 Attempt the following:

A) Consider a pixel which has two coordinate *X* and *Y*. [4]
    i. Which is the best data type suit to declare the pixel in C and also write the syntax to declare the pixel.
    ii. Write syntax initialize the *X* coordinate to 10 and *Y* coordinate to 15.
    iii. Write the syntax to display that initialize value of *X* and *Y* to the user.
    iv. Write the syntax to take four pixels of a square.

B) Write a program that compares two dates entered by user. To store date, use structure as a [4]
data type. Date that contains three members namely date, month and year. If the dates are equal then display message as "Both Dates are Equal" otherwise "Both dates are Unequal".

C) Define a structure in C. [4]

Consider a 'Book' which contains four fields as {Title, Author, Edition, ISBN}. Give proper syntax to declare a structure variable for Book and also initialize the values for structure elements as {"The C Programming Concepts", "Dennis Ritchie", 2, 0131103628} respectively.

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