Printed Pages : 4

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322354(22)

BE (3rd Semester)
Examination, April - May, 2017

[New Scheme]

Problem Solving and Logic Building using C

Time Allowed : 3 hours *Maximum Marks :* 80
Minimum Pass Marks : 28

Note : (*i*) Part (*a*) of each question is compulsory. Attempt any **two** parts from (*b*), (*c*) and (*d*).

(*ii*) The figures in the right-hand margin indicate marks.

1. (*a*) Whenever we use a variable in C program, it has to be first declared. What are the two things informed to the compiler when a variable is declared? [2]

(*b*) What is the basic structure of a C program? Explain with a neat diagram. [7]

(*c*) Write a C program to find the area of a triangle if its three sides are given.

$\left[\text{Formula : area} = \sqrt{s(s-a)(s-b)(s-c)}\right]$

Also draw its flowchart. [7]

(*d*) Explain the processes of building, compiling and executing a C program with diagram. [7]

2. (*a*) What will be the output of the following program segments? [1+1=2]

(*i*)
```
#include <stdio.h>
 int main ( )
{
    int i=l;
    i = 2+2*i++;
    printf ("%d", i);
    return 0 ;
}
```

(*ii*)
```
void main ( )
{   int choice = 2;
    switch (choice);
    {
    case 1:
        printf ("\n Allas");
        break;
    case 2 :
        printf ("\n Babo");
        break;
    case 3 :
        printf ("\n Hurray");
        break,
    }
    printf ("Finally I am in main");
}
```

(*b*) The monthly telephone bill is to be computed as follows :

Minimum ₹ 200 for up to 100 calls plus ₹ 0.60 per call for next 50 calls plus ₹ 0.50 per call for next 50 calls plus ₹ 0.40 per call for any call beyond 200 calls.

Write a program to compute monthly bill for any number of calls. [7]

(*c*) Write a program to generate the following pattern : [7]

```
A  B  C  D  D  C  B  A
A  B  C        C  B  A
A  B              B  A
A                    A
```

(*d*) What are the bitwise operators in C? Explain with an example. [7]

3. (*a*) Give the syntax and one example each of the following string handling functions : [½×4=2]

(*i*) strlen ( )

(*ii*) strcpy ( )

(*iii*) strcat ( )

(*iv*) strcmp ( )

(*b*) Explain bubble sort method by taking an example. Also write a C program to sort an integer array using bubble sort. [7]

(*c*) Write a C program to calculate the trace of a matrix. [Trace of a matrix is defined as the sum of the main diagonal elements.] [7]

(*d*) What do you mean by recursion? Write a C program to print the Fibonacci series using recursion. [7]

4. (*a*) What are the dynamic memory management functions in C? Give one example of each. [Any two functions] [2]

(*b*) Explain the concept of call-by-value and call-by-reference with a suitable example. [7]

(*c*) How will you represent a one-dimensional integer array using pointer? Write a C program to input an integer array and then display it using the concept of pointer. [7]

(*d*) Write a C program using command line argument which will behave same as DOS "copy" command. Also explain how command line arguments are used. [7]

5. (*a*) What is the difference between a text file and a binary file? [2]

(*b*) Write a short note on formatted I/O functions in C. [7]

(*c*) Write a program which will take the details of 50 employees as input and display the same. The details include

char[10]	eid
char [30]	ename
char [20]	department

[7]

(*d*) How will you generate a random access file in C? Explain it with an example. [7]

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