

# Visva Bharati

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ODD SEMESTER , 2021

Campus: Santiniketan

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## STATISTICS

Stat Computing with C

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B.Sc 5th semester

Semester Question Paper

Full Marks 40

(Time allowed: 3 hours)

**NOTE:** There are total 6 questions. Question 1 compulsory ( $10 \times 1 = 10$ ). Answer any **3** from the rest (rest all question carry  $5 + 5 = 10$  marks). (Total  $10 + (10 \times 3) = 40$  marks).

1. State whether the following statements are True or False (answer any 10).

- (a)  $\&$  is an '*Address of*' operator, but it can not give the location number used by the variable in memory.
- (b) Rules for Constructing Integer Constants: If no sign precedes an integer constant it is assumed to be positive.
- (c) Rules for Constructing Floating Point constants: It may not have a decimal point.
- (d) When we say  $\&a$ , we are telling *scanf()* at which memory location should it store the value supplied by the user from the keyboard.
- (e) The output of the statement `printf ( "Prin = %f \nRate = %f", p, r ) ;` would look like this:  

```
Prin = 1000
Rate = 8.5
```
- (f) Any C program contains at least one function.
- (g) If a C program contains more than one function, then one (or more than one) of these functions must be `main()`.
- (h) After each function has done its thing, control returns to `main()`. When `main()` runs out of function calls, the program ends.
- (i) A function can be called from other function, but a function cannot be defined in another function.
- (j) A function can return more than one value at a time.
- (k) Functions can be called either by value or reference.
- (l) A file opened for writing already exists its contents would be overwritten.

2. Find errors, if any, in the following program statements (Write short explanations also).

```
(a)    main( )
    {
    printf ( "\nI am in main" ) ;
    RUNNING( )
    {
    printf ( "\nI am RUNNING" ) ;
    }
    }
```

```
(b)    #include <stdio.h>
int main()
{
    struct
    {
        char bookname[25];
        float price;
    };
    struct book b = { "Go Embedded", 240.00 };
    printf("%s %f\n", b.bookname, b.price);
    return 0;
}
```

3. (a) Give examples of functions which

- (i) receives no input but returns a value.
- (ii) receives input but does not return any value.

(b) What will be the output of the following program in C? Write short explanations also, explaining the code.

```
#include <stdio.h>
float circle(int);
int main()
{
    float area ;
    int radius = 1 ;
    area = circle ( radius ) ;
    printf ( "\n%f", area ) ;
    return 0;
}
float circle(int r)
{
    float a;
    a = 3.14*r*r;
    return a;
}
```

- 4. (a) Distinguish between “call by value” and “call by reference” with suitable examples.
- (b) What will be the output of the following program in C? Write short explanations also, explaining the code.

```
#include <stdio.h>
void change(int*, int);
int main()
{
    int a[] = { 2, 4, 6, 8, 10 };
    int i;
    change(a, 5);
    for (i = 0; i <= 4; i++)
        printf("\n%d", a[i]);
    return 0;
}

void change(int *b, int n)
{
    int i;
    for (i = 0; i < n; i++)
        *(b + i) = *(b + i) + 5;
}
```

- 5. (a) What will be the output of the following program in C? Write short explanations also, explaining the code.

```
#include <stdio.h>
int main()
{
    int a[5] = { 5, 1, 15, 20, 25 };
    int i, j, k = 1, m;
    i = ++a[1];
    j = a[1]++;
    m = a[i++];
    printf("\n%d %d %d", i, j, m);
    return 0;
}
```

- (b) Two numbers are input through the keyboard into two locations C and D. Write a program to interchange the contents of C and D.

- 6. (a) Write a program using conditional operators to determine whether a year entered through the keyboard is a leap year or not.
- (b) Write a program in C to print the following number triangle (Floyd’s Triangle). (Floyd’s triangle is a triangular array of natural numbers. It is named after Robert Floyd. It is defined by filling the rows of the triangle with consecutive numbers, starting with a 1 in the top left corner).

```
1
2 3
4 5 6
7 8 9 10
```

