Seat No. : _____

DB-115

December-2013

5 Years M.Sc. (CA & IT) Integrated (K.S.) 1st Sem. FY M.Sc.

FUNDAMENTALS OF PROGRAMMING (FOP)

Time : 3 Hours] **[Max. Marks :100**

Instruction : (1) All questions are **compulsory**.
(2) Marks are indicated against each question.
(3) Draw appropriate diagrams wherever necessary.

I. Answer the following : **20**

(a) Define Flowchart. Draw the basic symbols of flow chart and state its usage.

(b) Write an algorithm to read a value of N and generate sum of first N odd natural numbers.

(c) List & explain the basic data types in C.

(d) What do you understand by the scope and lifetime of a variable ? Describe various storage classes that a 'C' variable can have.

II. (A) Do as directed : **10**

(1) Give Output of the following code :

```
void main ( ) {
    if ((5 || 1) && (1 && 0))
        printf("FOP exam.");
    else
        printf("Completed my exam."); }
```

(2) F = scanf("%f%f") will return F = 3, if we give 54 and 75.50 as an input. State True/False with reason.

(3) Give the output of following code :

```
void main( ) {
    int i,j,k,a;
    i=2; j = 5 ;
    k=++i*j—j ;
    printf( "%d %d ", k, a);
}
```

(4) Explain explicit type casting in brief.

(5) Continue keyword can be used with switch case. State True/False with reason.

II. (B) Attempt the following : (any **two**) **10**

(a) Explain the gets( ) & puts( ) functions with example.

(b) Explain giving suitable examples bitwise and logical operators available in C language.

(c) Compare use of switch statement with the use of else-if ladder. Convert the following Code snippet of Else-If into switch case :

```
if (num = = 1 || num = = 3 || num = = 5)
        printf("\nOdd");
else if(num = = 2 || num = = 4)
        printf("\nEven");
else
        printf("\nInvalid Input");
```

III. (A) Answer the following : (any **two**) **10**

(a) Differentiate between for-loop and while-loop.

(b) What is an array ? In what way does an array differ from an ordinary variable ? Explain the different ways of initializing a one-dimensional array.

(c) Write a C program to print the position of the smallest number among n elements using one-dimension array. Accept both n & the array elements from the user.

III. (B) Give the Output of the following code snippets, or find syntax errors (if any). **10**

(1)
```
for (i =0; i < 5 ; i++);
printf("%d",i);
```

(2)
```
char ch = 'E';
while(ch < 75 ) {
        ch++; }
printf("%c", ch);
```

(3)
```
for( k =10; k > 0; --k){
        rem= k-- %2;
        if (rem)
         printf("%d",k);
}
```

(4)
```
for ( j = –6; j < 7; j = j+2 ){
        if(j < 0)
         continue;
        printf("%d\t", pow(2,j)); //Assume <Math.h> header file is included.
}
```

(5)
```
void main ( ) {
        char s1[10] = "he", $2[20] = "she", s3[30], s4[30];
        printf("%s", strcpy(s3,s1));
        printf("%s",strcat (strcat( strcpy(s4, s1), "or"), s2));
}
```

IV. Answer any **four** in detail : **20**

(1) What is a String ? Explain the strcpy( ) and strcmp( ) functions with example.

(2) Write a C program to input two 3 × 3 matrices and then calculate the sum of their corresponding elements and store it in a third 3 × 3 matrix. Also display the third matrix.

(3) Differentiate between the following with example :

(a) scanf( ) with %s and gets( )

(b) strcat( ) and strncat( )

(4) In a small company there are 5 salesmen. Each salesman is supposed to sell 3 items. Write a C program using two-dimensional array to print the total sales (i.e. item1 + item2 + item3) of each salesman.

(5) List any 4 character manipulation functions and explain any 2 functions with example.

V. Answer the following : (any **two**) **20**

(1) Given an array, int arr[] = {9, 18, 27, 36, 45, 54, 63, 72, 81, 90, 99};
Trace the steps of binary search algorithm to find the values: 90 & 17.

(2) Write a C program to read N elements of a one-dimension array and sort these elements using Bubble Sort technique.

(3) Write a C program to input two m × n matrices. Multiply these matrices and store the result in an appropriate third matrix. Also display the same to the user.

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