Q-1[a]: Differentiate between algorithm and flowchart. Also list symbols used to draw flow chart.

Q-1[b]: Define Variable. Explain rules to declare valid variable in C language.

Q-1[c]: Write an algorithm / a flowchart to accept the value of n and find & display the sum of first n terms of following series: 
\[ \text{Sum} = 1! + 1! + 2! + 3! + 5! + 8! + 13! + \ldots \]

Q-2[a]: Explain structure of C language program.

Q-2[b]: State whether the following statements are valid or invalid:
(i) while(1) {printf("GDCST");}
(ii) for(;;);
(iii) #define RAM=12;
(iv) name = "mca"; (Note : name is character array of 5 elements)
(v) printf("%c %d",66,65);
(vi) n = 55 + 15 * 3 / 3; (Note n is a character variable)

Q-2[c]: List out the looping structures available in C. Explain any one of them in detail.

Q-2[d]: Write a program to accept an integer number and then print the reverse of the given number.

Q-3[a]: Define array. Explain how 1D and 2D array are declared and initialized in C language.

Q-3[b]: Differentiate:
(i) Entry controlled and exit controlled loop
(ii) Automatic type conversion and type casting

Q-3[c]: What will be the output, if any, for the following programs, otherwise specify error(s):
(i) 
```c
#include<stdio.h>
main()
{
    char ar[] = "SPU";
    printf("\n%ss", &ar[1]);
    printf("\n%ss", ar);
    printf("\n%cs", &ar);
    printf("\n%c", ar[1]);
}
```

Q-3[d]: Define function. Explain various methods to pass parameter to user defined function with appropriate example.
SECTION-II

Q-4[a]: List storage classes used in C program. Differentiate any two of them. [3]

[b]: What is a structure? How does a structure differ from an array? How are the members of structure variable assigned initial values? [3]

[c]: Indicate error(s), if any, for the following code fragments, otherwise give output:

(i) int no = 5;
    if ( no == 7)
        printf("no is seven\n");
    else
        printf("no is not seven\n");

(ii) printf("%d\n", printf("GDCST\n");

(iii) char ar[10] = "Sardar Patel";
        printf("%d", strlen(&ar[5]);

(iv) int a = 3;
    a = a > 3 ? a < 3 : 5;

Q-5[a]: Define String. Explain any two string handling functions with example. [4]

[b]: What is pointer? Explain the use of pointers with suitable example. [2]

[c]: Write a function that returns one if the inputted number is prime and returns zero otherwise. [3]

[d]: Do as directed: [3]

(i) How are formal arguments declared within a function?
(ii) What are the three principal components of a function definition?
(iii) Can an array be included as a member of a structure? How/why?

Q-6[a]: State the arguments that can be passed in main() function. Discuss significance of each argument by giving an example. [3]

[b]: Match the following: [4]

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i) #define</td>
<td>a. If this macro is defined</td>
</tr>
<tr>
<td>(ii) #ifdef</td>
<td>b. Token merge, creates a single token from two adjacent ones</td>
</tr>
<tr>
<td>(iii) ##</td>
<td>c. Inserts a particular header from another file</td>
</tr>
<tr>
<td>(iv) #include</td>
<td>d. Test if a compile time condition is true</td>
</tr>
<tr>
<td></td>
<td>e. Defines a preprocessor macro</td>
</tr>
</tbody>
</table>

[c]: Describe the #define and #include preprocessor directives. [3]

[d]: Explain fopen() and fclose() file handling functions with syntax and example. [3]

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