Code : 100104

B.Tech 1st Semester Exam., 2021
(New Course)

PROGRAMMING FOR PROBLEM SOLVING

Time : 3 hours | *Full Marks* : 70

Instructions :

(i) The marks are indicated in the right-hand margin.

*(ii) There are **NINE** questions in this paper.*

*(iii) Attempt **FIVE** questions in all.*

*(iv) Question No. **1** is compulsory.*

1. Choose the correct answer/Answer any *seven* of the following : 2×7=14

(a) What will be the output of given C code?

```
#include <stdio.h>
int main()
{
    int arr[5];
    //Assume that base address of arr is
    2000 and size of integer // is 32 bit
    arr++;
    printf ("%u", arr);
    return 0;
}
```

(i) 2002 *(ii)* 2020

(iii) 2024 *(iv)* I value required

(b) What will be the output of given C code?

```
#include <stdio.h>
int main()
{
    int a[5] = {1, 2, 3, 4, 5};
    int * ptr = (int*) (&a+1);
    printf ("%d %d", *(a+1), *(ptr–1));
    return 0;
}
```

(i) 25

(ii) Garbage value

(iii) Compile error

(iv) Segmentation fault

(c) The bitwise complement of 0 is

(i) 00000001

(ii) 10000000

(iii) 11111111

(iv) 11111110

(d) Which of the following is not a magnetic disk?

(i) Floppy

(ii) Winchester

(iii) Zip

(iv) Flash

(e) What will be the output of given C code?

```
int main()
{
char * ptr1, * ptr2;
printf ("%d %d", sizeof(ptr1), sizeof(ptr2));

return 0;
}
```

(i) 1 1

(ii) 2 2

(iii) 4 4

(iv) Undefined

(f) The ALU gives the output of the operations and the output is stored in the

(i) memory devices

(ii) registers

(iii) flags

(iv) output unit

(g) What should be the output of the given C code?

```
#include <stdio.h>
  int main()
{
    static int var = 5;
    printf ("%d", var--);
    if (var)
        main();
}
```

(h) The process of division on memory spaces is called

(i) paging

(ii) segmentation

(iii) bifurcation

(iv) dynamic division

(i) Write the output of the given C code.

```
#include <stdio.h>
int fun (int n)
{
    int i, j, sum = 0;
    for (i = 1; i <= n; i++)
        for (j = i; j <= i; j++)
            sum = sum + j;
    return (sum);
}

int main( )
{
    printf ("%d", fun (15));
    getchar( );
    return 0;
}
```

(j) Write the output of the given C code.

```
#include <stdio.h>
int main( )
{
    printf ("%p", main);
    getchar( );
    return 0;
}
```

2. (a) Draw flowchart to determine whether a given number is even or odd.

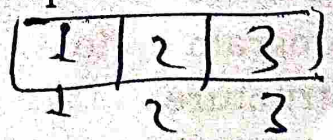
(b) What is meant by digital computer? Draw a schematic to show various functional units of digital computer. 7+7

3. (a) Define enumerated data types with suitable example.

(b) What are compilers? How are they different from interpreters? Compare the feature of compiler and interpreter. 7+7

4. (a) Differentiate between function declaration and function definition. Explain with suitable example.

(b) Draw and label different symbols used in flowcharts. Explain with suitable example. 7+7



5. (a) Write the program to swap values of two variables using call by reference.

(b) Develop a program to find sum of all elements stored in given array using pointers. 7+7

6. *(a)* Write a program to print the lowercase characters into uppercase and vice versa in the given string "gOOd mORning".

(b) Develop an algorithm to find the greatest of three numbers. 7+7

7. *(a)* Write a program to display the sum and average of numbers from 100 to 200 using pointers.

(b) Write a program to accept a string as input from user and determine its length. [Do not use built in library function strlen( ).] 7+7

8. *(a)* Give a method to create, declare and initialize structure also develop a program to demonstrate nested structure.

(b) The value of a number (N) is entered through keyboard. Write a program using recursion to calculate and display factorial of number (N). 7+7

9. *(a)* Explain how to pass pointer to function with example.

(b) Write a program to declare structure employee having data member name, age, street and city. Accept data for two employees and display it. 7+7

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