Name: …….
Roll No: ……..

Structured Programming Language

Class Test-1 Marks: 20

Q1. Why do we prefer high-level language over assembly language? What would be potential benefits of using assembly language? 1 + 2

Q2. Suppose there is a new datatype whose size is 23 bits. This datatype can be both signed and unsigned. What are ranges of numbers that can be expressed using this new type?
4

Q3. What will be the output of the following code? Why? 1 + 1

```
# include<stdio.h>
int main(){
        int length, width, height;
        scanf("%d %d %d", &length, &width, &height);
        int volume = length * width * height;
        printf("Volume is %d" &height);
        return 0;
}
```

Variable	Value	Address
length	10	101
width	21	102
height	40	103
volume		104

Q4. Evaluate the following expressions. Show detailed calculations. Write invalid if it is an invalid expression. Value of a and b are 6 and 7 respectively. Each expression is independent and are not affected by others. 5

a. (a == b) || (a = b)
b. (a += b) && (a == 15)
c. (a >> 1) + b
d. (a & b) || a = b
e. a + b

Q5. We are all familiar with quadratic equation $ax^2+bx+c = 0$ and its root. The nature of the root depends on sign of discriminant that is the term $b^2 – 4ac$. Following two cases can happen:
6

1. Root(s) will be real if discriminant is non-negative.
2. Otherwise, they will be complex number.

Write a C program that takes the values of a, b and c as input and prints whether the root(s) are real or complex.