Computer Engineering Department, S V N I T, Surat.
B Tech-II (CO) 3rd semester
Course: Data Structure and Algorithm (CO-203)
Tutorial – 3
(Stack and its application)

1. Consider the following C code:

```
int f(int x)
{
        int y;
        if (x==0)
                return 1;
        else
        {
                y = 2*f(x-1);
                return y+1;
        }
}
```

   Show how a call to function f(2) will be executed with the help of program stack.
   Show the push and pop sequence of all activation records.
   What will be the final result of f(2)?

2. Explain any three difficulties that can arise if an INFIX expression is evaluation by computer.

3. Convert the following INFIX expression to their POSTFIX and PREFIX equivalent.
      a. A+B*C+D
      b. (A+B)*(C+D)
      c. A*B+C*D
      d. A+B+C+D
      e. (A+B)*C-(D-E)*(F+G)

4. Consider the following INFIX expression:
      a. (4+8)*(6-5)/((3-2)*(2+2))
      b. (((1+2)*3)+6)/(2+3)

   Convert the above expression to POSTFIX notation by following the algorithm.
   Also, evaluate the POSTFIX expression by following the algorithm.
   Clearly show the content of the stack and output string in each iteration.