Assignment Questions Based on Stack
(Last Date of Submission is Last Date of Internal submission)

1. Convert the given infix expression to postfix expression using stack and the Details of stack at each step of conversion.
   Expression: A * B ↑ C – D / E + [F / G]

2. Show the effect of PUSH and POP operation on the stack of size 10. The stack contains 10, 20, 25, 15, 30 & 40 with 40 being at top of stack. Show diagrammatically the effect of
   (i) PUSH (45)
   (ii) PUSH (50)
   (iii) POP
   (iv) PUSH (55)

3. Find out prefix equivalent of the expression :
   (i) [(A + B) + C] * D
   (ii) A [(B * C) + D]

4. Convert the following infix expression to its postfix form using stack :
   A + B – C * D/E + F

5. Show the effect of PUSH and POP operation on to the stack of size 10. The stack contains 10, 20, 30, 40, 50 and 60, with 60 being at top of the stack. Show diagrammatically the effect of –
   (i) PUSH 55
   (ii) PUSH 70
   (iii) POP
   (iv) POP

6. Convert the infix expression to its postfix expression using stack ((A + B) * D) ^ (E – F). Show diagrammatically each step of conversion.

7. Evaluate the following postfix expression :

   4 6 2 4 + * 6 3 / –

   Show diagrammatically each step of evaluation using stack.

8. Evaluate the following postfix expression :

   10, 2, *, 15, 3, /, +, 12, 3, +, +

   Show diagrammatically each step of evaluation using stack.

9. Convert the following Infix expression to its prefix form using stack. Show The details of stack at each step of conversion.

   Expression: P * Q R – S / T + (U/V)

10. Evaluate the following arithmetic expression P written in postfix Notation: P: 4, 2, ^, 3, *, 3,-, 8, 4, /, +

11. Convert the following infix expression to postfix expression using stack and show the details of stack in each step. ((A+B)*D)^ (E-F)

12. Convert the following infix expression to its prefix form using stack A + B – C * D/E + F

13. Evaluate the following postfix expression:

    5, 6, 2, +, *, 12, 4, /, - Show diagrammatically each step of evolution using stack.

14. Evaluate the following prefix expression:

    - * + 4 3 2 5 show diagrammatically each step of evaluation using stack.

15. Show the effect of PUSH and POP operation on to the stack of size 10. The stack contains 40, 30, 52, 86, 39, 45, 50 with 50 being

at top of the stack. Show diagrammatically the effect of:

(i) PUSH 59

(ii) PUSH 85

(iii) POP

(iv) POP

(v) PUSH 59

(vi) POP

Sketch the final structure of stack after performing the above

16. Convert infix expression into prefix expression : (A + B)*(C / G) + F Convert infix expression into prefix expression : (A + B)*(C / G) + F

17. Convert following expression into postfix form. Give stepwise procedure.

A + B ↑ C * (D / E) – F / G

Assignment Questions Based on Linked List
(Last Date of Submission is Last Date of Internal submission)

1. Create a singly linked list using data fields 90, 25, 46, 39, 56.
   Search a node 40 from the SLL and show procedure step-by-step with the help of diagram from start to end.
2. Write an algorithm to count number of nodes in singly linked list.
3. Write an algorithm to delete a node from the beginning of a circular linked list.
4. Create a singly linked list using data fields 15, 20, 22, 58, 60. Search a node 22 from the SLL and show procedure step-by-step with the help of diagram from start to end. Write a program to traverse a linked list.
5. Write an algorithm to count number of nodes in singly linked list.
6. Describe circular linked list with suitable diagram. Also state advantage of Circular linked list over linear linked list.
7. Write an algorithm to insert an element at the beginning and at end of linked list.
8. Describe procedure to delete an element from singly linked list using diagram.
9. Construct a singly linked list using data fields 21 25 96 58 74 and show procedure step-by-step with the help of diagram start to end.
10. Write an algorithm to search a particular node in the give linked list.
11. Show with suitable diagrams how to delete a node from singly linked list at the beginning, in between and at the end of the list.
12. Write an algorithm to insert a new node at the beginning of a singly linked list. Give example.
13. Describe circular linked list with suitable diagram. Also state advantage of circular linked list over linear linked list.

14. Write an algorithm to search an element in linked list.
15. Write an algorithm to delete a node at the beginning from a singly Linked List.
16. Write an algorithm to delete an intermediate node in a singly linked list.
17. Create a singly Linked List using data fields 10, 20, 30, 40, 50 and show procedure step-by-step with the help of diagram from start to end.
18. Create a singly linked list using data fields 10, 20, 30, 40, 50. Search a node 40 from the singly linked list and show procedure step-by-step with the help of the diagram from start to end.