Q1. Which of the following problems can be solved using a stack?

a) Balanced Parentheses

b) Graph Traversal

c) Dijkstra's Algorithm

d) Kruskal's Algorithm

Answer: a

Q2. What will be the postfix expression of (A+B)*(C-D)?

a) AB+CD-*

b) ABCD+-*

c) A+B*C-D

d) AB+C-D*

Answer: a

Q3. Which stack operation is used to undo the last action in text editors?

a) Push

b) Pop

c) Peek

d) Reset

Answer: b

Q4. Which of the following is true about stack pointer?

a) Points to base

b) Points to top

c) Points to middle

d) Points to last inserted only

Answer: b

Q5. Which data structure is used for depth-first traversal in graphs?

a) Queue

b) Stack

c) Array

d) Tree

Answer: b

Q6. Which of the following is true about recursion and stack?

a) Each recursive call adds to stack

b) Recursive functions do not use stack

c) Recursion removes stack entries immediately

d) Stack is not required for recursion

Answer: a

Q7. Which of the following operations is expensive in linked list implementation of stack compared to array?
a) Push
b) Pop
c) Traversal
d) None
Answer: c

Q8. Which of these is a postfix expression for (A+B)/C?
a) AB+C/
b) ABC/+
c) A+BC/
d) AB/C+
Answer: a

Q9. Which expression is equivalent to prefix *+AB-CD?
a) (A+B)*(C-D)
b) (A*B)+(C-D)
c) (A-B)+(C*D)
d) (A+B)-(C*D)
Answer: a

Q10. Which of the following is NOT true about stacks?
a) Used for backtracking
b) Used in parsing
c) Supports random access
d) Supports recursion
Answer: c

Q11. How many stacks are required to evaluate a postfix expression efficiently?
a) 1
b) 2
c) 3
d) 4
Answer: a

Q12. In two-stack method for implementing queue, how is dequeue performed?
a) Push all elements to second stack, pop one
b) Pop from first stack

c) Pop from second stack

d) Push and pop simultaneously

Answer: a

Q13. Which of the following expressions is postfix for (A+B)*(C+D)?

a) AB+CD+*

b) A+B*C+D

c) ABCD+*+

d) A*B+C*D

Answer: a

Q14. Which stack-based algorithm is used for evaluating arithmetic expressions?

a) Dijkstra's Two-Stack Algorithm

b) Prim's Algorithm

c) Floyd-Warshall Algorithm

d) Bellman-Ford Algorithm

Answer: a

Q15. Which is the postfix of A*(B+C/D)?

a) ABCD/+*

b) AB+CD/*

c) ABD/C+*

d) ABC+D/*

Answer: c

Q16. Which of these requires stack for implementation?

a) DFS

b) BFS

c) Dijkstra

d) Kruskal

Answer: a

Q17. What is the minimum number of stacks needed to implement a queue?

a) 1

b) 2

c) 3

d) 4

Answer: b

Q18. Which of the following is an example of stack overflow in recursion?

a) Infinite recursive call

b) Array overflow

c) Queue overflow

d) None

Answer: a

Q19. Which of the following is true about postfix evaluation using stacks?

a) Operands are pushed, operators pop two operands

b) Operators are pushed, operands popped

c) Both operands and operators pushed

d) None

Answer: a

Q20. Which data structure is better to implement stack if memory is constrained?

a) Array

b) Linked List

c) Graph

d) Tree

Answer: a

Q21. Which data structure can simulate multiple stacks efficiently?

a) Single array with partition

b) Single linked list

c) Queue

d) Graph

Answer: a

Q22. Which is the postfix for A+B*C?

a) ABC*+

b) AB+C*

c) A*BC+

d) AB*+C

Answer: a

Q23. Which of the following expressions is prefix of A+B*C?

a) +A*BC

b) +AB*C

c) A+BC*

d) A*B+C

Answer: a

Q24. Which stack-based algorithm finds strongly connected components?

a) Kosaraju's Algorithm

b) Prim's Algorithm

c) Kruskal's Algorithm

d) Dijkstra's Algorithm

Answer: a

Q25. Which stack operation is required to match parentheses?

a) Push only

b) Pop only

c) Push and Pop

d) None

Answer: c

Q26. Which stack-based algorithm is used for converting infix to postfix?

a) Shunting Yard Algorithm

b) DFS

c) BFS

d) Bellman-Ford

Answer: a

Q27. Which of the following is postfix of (A-B)*(C+D)?

a) AB-CD+*

b) A-B*CD+

c) A*B-CD+

d) AB-C*D+

Answer: a

Q28. Which expression tree uses stack for construction?

a) Infix expression tree

b) Postfix expression tree

c) Both infix and postfix

d) None

Answer: b

Q29. Which application uses stack?

a) Tower of Hanoi

b) Page replacement

c) Job scheduling

d) None
Answer: a

Q30. Which of the following is postfix of (A+B)*(C-D)?
a) AB+CD-*
b) ABCD+*
c) AB+C-D*
d) AB*+CD-
Answer: a

Q31. Which of the following is NOT a postfix expression?
a) AB+
b) ABC*+
c) A+B
d) AB*CD+
Answer: c

Q32. Which stack operation is used to reverse a string?
a) Push only
b) Pop only
c) Push and Pop
d) None
Answer: c

Q33. Which of the following is postfix of A+B-C?
a) AB+C-
b) A+BC-
c) ABC+-
d) A-B+C
Answer: a

Q34. Which algorithm for expression evaluation is stack-based?
a) Polish Notation
b) Dijkstra's Algorithm
c) Kruskal's Algorithm
d) Prim's Algorithm
Answer: a

Q35. Which of these is a postfix for (A+B)/C?
a) AB+C/

b) ABC/+

c) A+BC/

d) AB/C+

Answer: a

Q36. Which of the following uses stack to check validity?

a) Balanced symbols

b) Sorting numbers

c) Searching arrays

d) BFS

Answer: a

Q37. Which of the following is true for prefix expression evaluation?

a) Read right to left

b) Read left to right

c) Same as infix

d) Same as postfix

Answer: a

Q38. Which is postfix for A*(B+C)?

a) ABC+*

b) AB+C*

c) A*BC+

d) A+B*C

Answer: a

Q39. Which of the following is postfix for (A+B+C)?

a) AB+C+

b) A+BC+

c) ABC++

d) A+B+C

Answer: c

Q40. Which stack-based algorithm is used for syntax parsing?

a) Shift-reduce parsing

b) BFS

c) DFS

d) Prim's

Answer: a

Q41. Which postfix expression represents A*B+C*D?

a) AB*CD*+

b) ABCD+*+

c) A*B+CD*

d) AB+C*D*

Answer: a

Q42. Which prefix expression represents A+B*C?

a) +A*BC

b) *+ABC

c) +AB*C

d) A+BC*

Answer: a

Q43. Which postfix is valid for A*B-C?

a) AB*C-

b) A*BC-

c) A-B*C

d) AB-C*

Answer: a

Q44. Which postfix represents (A+B)/(C-D)?

a) AB+CD-/

b) A+B/CD-

c) A/B+CD-

d) AB/CD+-

Answer: a

Q45. Which postfix represents A+(B-C*D)?

a) ABCD*-+

b) AB+CD*-

c) A+BCD*-

d) A+BC*D-

Answer: a

Q46. Which stack-based algorithm is used for DFS?

a) Recursive stack

b) Queue

c) Array

d) Heap

Answer: a

Q47. Which postfix represents A*B+C?
a) AB*C+
b) ABC*+
c) A+BC*
d) A*BC+
Answer: a

Q48. Which prefix represents A*B+C*D?
a) +*AB*CD
b) *+ABCD
c) *AB+CD
d) +A*BCD
Answer: a

Q49. Which postfix represents (A-B)/(C+D)?
a) AB-CD+/
b) AB-CD/+
c) A-B/CD+
d) AB/C+D-
Answer: a

Q50. Which of the following is true about evaluation of postfix expression?
a) Left to right scanning
b) Right to left scanning
c) Random order
d) None
Answer: a