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II Semester B.C.A. Degree Examination, June/July - 2026**COMPUTER APPLICATIONS****Data Structures****(SEP Scheme)****Time : 3 Hours****Instructions to Candidates:**

Answer all the Sections.

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Bengaluru-560018

Maximum Marks : 80**SECTION - A****I. Answer any Ten questions. Each question carries 2 marks.****(10×2=20)**

1. What is primitive data structures? Give an example.
2. Explain any two string functions.
3. What is order of growth of the functions?
4. Define Malloc () and Calloc ().
5. Define arrays.
6. Write an algorithm for bubble sort.
7. What is linked list.
8. Define overflow and underflow condition in stack.
9. Write applications of stack.
10. Define queue and its operations.
11. Define binary tree with an example.
12. Define Graph.

[P.T.O.]



(2)
SECTION - B

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II. Answer any Six questions. Each question carries 5 marks. (6×5=30)

13. Define data structures and explain the classification of data structures.
14. Explain Asymptotic notations.
15. Explain binary search algorithm with an example.
16. Write an algorithm for inserting a node at the beginning of a singly linked list with example.
17. Explain recursion and its applications.
18. Evaluate following postfix expression using stack. $(874*+3-2*)$.
19. Explain Hashing Components.
20. Explain traversal of binary tree.

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SECTION - C

III. Answer any Three questions. Each question carries 10 marks. (3×10=30)

21. Write a C program to sort 'n' numbers using selection sort and explain the complexity of selection sort. (10)
22. a) Explain memory representations of multidimensional arrays. (5)
b) Write an algorithm for linear search. (5)
23. Define stack and explain push and pop operations with suitable example. (10)
24. a) Explain Tower of Hanoi problem. (5)
b) Convert following infix expression to prefix expression.
$$((a + (b * c)) + ((d * e) + f) + g)$$
 (5)
25. Explain breath first search. (10)