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(Pages : 2)

Reg. No.....

Name.....

B.Sc./B.C.A. DEGREE (C.B.C.S.S.) EXAMINATION, MAY 2017

Second Semester

Core Course—DATA STRUCTURES

(For B.Sc. Computer Applications and B.C.A..)

[2013 Admission onwards]

Time : Three Hours

Maximum Marks : 80

Part A (Short Answer Questions)

*Answer all questions.
Each question carries 1 mark.*

1. The logical or Mathematical Model of a particular organization of data is called _____.
2. _____ of an algorithm measures the time or space used by an algorithm in terms of input size.
3. Combining two sorted lists into a single sorted list is called _____.
4. The number K in A [K] is called _____.
5. The complexity of bubble sort algorithm is _____.
6. Matrices with a relatively high proportion of zero entries are called _____.
7. When new data are to be inserted into a data structure where there is no available space is called _____.
8. An example for a LIFO data structure is _____.
9. A _____ is a collection of records.
10. _____ is a finite set of homogeneous elements.

(10 × 1 = 10)

Part B (Brief Answer Questions)

*Answer any eight questions.
Each question carries 2 marks.*

11. What do you mean by garbage collection ?
12. What is a circular queue ?
13. What are binary trees ?
14. How will you represent an array with five elements in memory ?

Turn over

15. What is hashing function ?
16. List the names of any *four* data structures.
17. What are the operations done on a data structure ?
18. What is a linked list ? How is it represented ?
19. What is the difference between a triangular matrix and tridiagonal matrix ?
20. What is the difference between a sequential file and a random file ?
21. What is polish notation of an expression ? Give an example.
22. What do you mean by a complete binary tree ?

(8 × 2 = 16)

Part C (Descriptive/Short Essay Type Questions)

*Answer any six questions.
Each question carries 4 marks.*

23. Write an algorithm to sort a list of numbers in ascending order.
24. Write notes on binary search trees.
25. Write the procedure for inserting an element into an array.
26. What is recursion ? Write a program to find the factorial of a number using recursion.
27. Explain push and POP operations on a stack.
28. Explain cellular partitioning.
29. What are the different types of linked list ?
30. What are the applications of stack and queues ?
31. Convert $((A + B) * D) \uparrow (E - F)$ to prefix and postfix format.

(6 × 4 = 24)

Part D (Long Essays)

*Answer any two questions.
Each question carries 15 marks.*

32. Explain linear search and binary search algorithms. Compare both.
33. Explain the different tree traversing methods.
34. Explain insertion and deletion operations in a queue.
35. Write notes on :
 - (a) Inverted files.
 - (b) Creation of binary search tree.
 - (c) Doubly linked list.

(2 × 15 = 30)