Total No. of Questions : 8]

SEAT No. :

PA-1234

[Total No. of Pages : 2

[5925]-256
S.E. (Computer /AI&DS)
FUNDAMENTALS OF DATA STRUCTURES
(2019 Pattern) (Semester - III) (210242)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.***
2) ***Figures to the right indicate full marks.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Make suitable assumption whenever necessary.***

Q1) a) Write pseudo 'Python' algorithm (recursive) for binary search. Apply your algorithm on the following numbers stored in array from A[0] to A[10] 9, 17, 23,38,45,50,57,76,90,100 to search numbers 10 & 100. **[9]**

b) Explain the quick sort algorithm. Show the contents of array after every itertion of your algorithm start from following status of array.-

27, 76, 17, 9, 57, 90, 45, 100, 79. **[9]**

OR

Q2) a) Explain in brief the different searching techniques. What is the time complexity of each of them? **[9]**

b) Write an algorithm of selection sort and sort the following numbers using selection sort and show the contents of an array after every pass:-

81, 5, 27, –6, 61, 93, 4, 8, 104, 15 **[9]**

Q3) a) What is linked list? Write a pseudo C++ code to sort the elements. **[9]**

b) What is doubly linked list? Explain the process of deletion of an element from doubly linked list with example. **[9]**

OR

Q4) a) Explain Generalized Linked List with example. **[9]**

b) Write Pseudo C++ code for addition of two polynomials using singly linked list. **[9]**

P.T.O.

Q5) a) Write an algorithm for postfix evaluation with suitable example. **[8]**

b) What is concept of recursion? Explain the use of stack in recursion with example. **[9]**

OR

Q6) a) What is need to convert the infix expression into postfix; convert the following expression into postfix expression (a+b) * d + e/(f + a*d) + c. **[8]**

b) What is backtracking algorithm design strategy? How stack is useful in backtracking **[9]**

Q7) a) Write pseudo C++ code to represent dequeue and perform the following operations on dequeue: **[8]**

i) Create

ii) Insert

iii) Delete

iv) Display

b) What is circular queue? Explain the advantages of circular queue area linear queue. **[9]**

OR

Q8) a) Define queue as an ADT. Write pseudo C++ code to represent queue. **[8]**

b) Explain Array implementation of priority queue with all basic operations. **[9]**

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