

Ex/Math/Comp.Sc./12/5/57/2018 (Old)
BACHELOR OF SCIENCE EXAMINATION, 2018
(1st Year, 2nd Semester)
DATA STRUCTURE AND FILE ORGANIZATION
Unit - 5
[Old Syllabus]

Full Marks : 50

Time : Two Hours

The figures in the margin indicate full marks.

(Notations and Symbols have their usual meanings)

Answer any *five* questions.

1. Find the number of comparisons and also find the number of interchanges to sort the word 'PEOPLE', using the bubble sort algorithm. Write the no of passes required to sort 'PEOPLE' alphabetically. Show the sequence of letters changed in each pass. 10

2. Write an algorithm to translate an infix expression to its postfix equivalent and illustrate with an appropriate example. 10

[Turn over]

[2]

3. What is recursion ? Write recursive algorithm to solve 'Tower of Hanoi' problem. Explain with schematic diagram of each step for $n = 4$, where n means the number of disks.

10

4. What is 'Priority Queue'? Discuss the two-dimensional array representation of 'Priority Queue'. Explain insertion/deletion operations of Priority Queue using appropriate example. 10

5. Suppose a queue is maintained by a circular array QUEUE with $N=12$ memory cells. Find the number of elements in QUEUE if (a) FRONT = 4, REAR = 8 (b) FRONT = 10, REAR = 3 (c) FRONT = 5, REAR = 6 and then two elements are deleted. Show pictures in each case. 10

6. (a) What is link list ? Discuss the representation of linked list in memory with appropriate diagram.

- (b) Suppose a list 'LIST' is in the memory. Write an algorithm which deletes the last node from 'LIST'.

5+5

7. Suppose NAME 1 is a list in the memory. Write an algorithm which copies NAME 1 into a list NAME 2. 10
