Total No. of Questions : 5]

SEAT No. :

P5137

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S.Y. B.Sc. (Computer Science)

CS-231 : DATA STRUCTURES AND ALGORITHMS-I

(2019 Pattern) (Semester - III) (Paper-I)

Time : 2 Hours] *[Max. Marks : 35*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicates full marks.***
3) ***Neat diagrams must be drawn whenever necessary.***

Q1) Attempt any 8 of the following. **[8×1=8]**

a) Define Data object.

b) Define In-place sorting.

c) What is circular linked list?

d) State the principle used in 4-queen problem.

e) Define Queue.

f) What is time complexity?

g) What is best case & worst case time complexity of merge sort algorithm?

h) "Linked list can be accessed randomly" state true/false. Justify.

i) Round-robin algorithm is example of which type of queue?

j) List any two applications of stack.

Q2) Attempt any 4 of the following. **[4×2=8]**

a) Define Big Oh (O) and Big Omega (Ω) Notations.

b) Define Array. List of an array.

c) Differentiate between singly linked list and doubly linked list.

d) Convert following expression to equivalent postfix and prefix notation.

$(A+B)*C-(D-E) \wedge (F+G)$

e) What are operations performed on dequeue?

P.T.O.

Q3) Attempt any two of the following: **[2×4=8]**

a) Define Data structure and explain types of Data structure.

b) Sort the following data using bubble sort method:
30, 40, 10, 50, 25, 35, 15

c) Write a 'C' function to create doubly linked list.

Q4) Attempt any two of the following: **[2×4=8]**

a) Show the stack contents and output while converting following infix expression to postfix expression. A/B∧C+D∗E–A∗C

b) What is linear queue? How to implement it? Explain in detail.

c) List the variants of sequential search. Explain any one with an example.

Q5) Attempt any one of the following: **[1×3=3]**

a) List advantageous & disadvantageous of circular queue.

b) Write a short note on generalized linked list.

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