

Roll No.

Total Pages : 03

008605

May 2024

B. Tech. (ECE) (Sixth Semester)

Data Structure (OEL-602)

Time : 3 Hours]

[Maximum Marks : 75

Note : It is compulsory to answer all the questions (1.5 marks each) of Part A in short. Answer any *four* questions from Part B in detail. Different sub-parts of a question are to be attempted adjacent to each other.

Part A

1. (a) Define a function. Is it necessary for it to return a value to the calling statement ?
1.5
- (b) What primitives/constructs are used to implement conditional statements ? 1.5
- (c) What do you mean by data structure ? 1.5
- (d) Are matrices and arrays same ? Can these be used interchangeably ? 1.5
- (e) What is a queue ? Name the types of queues.
1.5
- (f) How are multidimensional arrays represented ?
1.5

- (g) How are graph and tree different, if at all ? 1.5
- (h) Distinguish between data and information. 1.5
- (i) Define a Set. What values the membership of a set can take ? 1.5
- (j) What do you mean by Recursion ? 1.5

Part B

- 2. (a) How to design and develop an algorithm ? What use can be made of accumulators and counters ? 10
- (b) Define complexity of algorithm, how is this complexity interpreted and measured ? 5
- 3. (a) How is address calculation effected of a location in arrays ? 3
- (b) Compare and contrast any *three* sorting algorithms, citing strengths and limitations of each. 12
- 4. (a) What is the use/application of stacks ? Does the application. Where in the memory is the stack usually reserved/stored ? 5
- (b) Define different types of queues. Explain their applications. 10

- 5. (a) Define pointer variables. Write a small representative program or pseudocode to demonstrate the use of pointers. 6
- (b) Elaborate the concept of linked list. Also state what do you understand by circular linked list and doubly linked list. What operations are possible on linked lists ? 9
- 6. (a) How is file organization handled ? 5
- (b) Define different operations on binary trees. 5
- (c) Draw a typical binary tree type and implement the same in array form. 5
- 7. Write a short technical note on BFS & DFS. 15