



VII SEMESTER B.TECH (ELECTRICAL & ELECTRONICS ENGINEERING)
MAKEUP EXAMINATIONS, DECEMBER 2022

DATA STRUCTURES & ALGORITHMS [ELE 4078]

REVISED CREDIT SYSTEM

Time: 3 Hours

Date: 29/12/2022

Max. Marks: 50

Instructions to Candidates:

- ❖ Answer **ALL** the questions.
- ❖ Missing data may be suitably assumed.

- 1A.** Describe the asymptotic notations associated with algorithms **(04)**
- 1B.** Solve using Dynamic programming
 $C = 100$; $W = [25, 35, 40, 60]$; $P = [10, 12, 14, 20]$ **(04)**
- 1C.** Summarize the applications of stack. **(02)**
- 2A.** Classify the user-defined data structures. Give example for each. **(04)**
- 2B.** Solve the recurrence equation using substitution method and determine the time complexity.
 $T(n) = d$ if $n = 1$;
 $= T(n/2) + C$ if $n > 1$ **(04)**
- 2C.** What are the disadvantages of Queue? How is it overcome? **(02)**
- 3A.** How many pointers are necessary to implement a simple Linked List? Discuss each. **(03)**
- 3B.** Construct a binary tree using the following details.
 In order [] = { D B E A F C G }; Post order [] = { D E B F G C A } **(03)**
- 3C.** Develop a pseudocode to develop a doubly linked list. How do you delete the last node in doubly linked list. **(04)**
- 4A.** Write pseudocode/algorithm to PUSH and POP elements to/from a STACK. **(04)**
- 4B.** Write a pseudocode/algorithm to print the sorted list of elements contained in a Binary search tree. **(02)**
- 4C.** Convert the following string into its postfix expression.
 $(300 + 23) * (43 - 21) / (84 + 7)$ **(04)**
- 5A.** Write a note on hashing with an example. **(04)**

- 5B.** Write a pseudocode to initialize an array with natural numbers. Write suitable comments. **(04)**
- 5C.** Which type of memory allocation is referred for Linked List? Why? **(02)**