

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Semester: July 2023 – October 2023**  **Maximum Marks: 30 Examination: In-Semester Examination Duration 1:15 hrs** | | | | |
| **Programme code: 01**  **Programme: BTech** | | **Class: SY** | | **Semester:** III **(SVU 2020)** |
| **Name of the Constituent College:**  **K. J. Somaiya College of Engineering** | | | **Name of the department: COMP/IT** | |
| **Course Code: 116U01C302** | **Name of the Course: Data Structures** | | | |

|  |  |  |
| --- | --- | --- |
| **Question No.** |  | **Max.**  **Marks** |
| Q1 | Solve **Any TWO**   1. Differentiate between linear data structure and Non- linear Data structure. 2. Write queue ADT(write any two operator definitions) 3. Justify appropriate to to-do list which accepts random insertions and keeps it organized as per preference order. | 10 |
| Q2 | Write a Pseudocode/algorithm for implementation of the following operations on singly linked list. (Consider all possible cases)  i. Insertion in Between  ii. Searching a Data item in a Linked List    OR  What is recursion? How the stack will be used in recursive function calls? Explain the concept with a scenario of factorial computation function that uses recursion. | 10 |
| Q3 | Convert the given infix expression into prefix using stack. Show the contents of stack and output string with every input element.  A – (B / C + (D % E \* F) / G)\* H | 10 |