Semester: August 2021 - November 2021 Examination: In Semester Examination		
Programme code: 01/04 **Programme:** B. Tech Computer Engineering	**Class:** SY	**Semester:** III (SVU 2020)
Name of the Constituent College: **K. J. Somaiya College of Engineering**	**Name of the department/Section/Center:** COMP/IT	
Course Code: 116U01L302	**Name of the Course:** Data Structures	

Question No.		Max. Marks	CO Mapped
Q1.1	Reverse Polish notation is the other name of (a) Infix expression (b) Prefix expression (c) Postfix expression (d) Algebraic expression	01	CO2
Q1.2	Which type of linked list does not store NULL in next field? (a) Singly linked list (b) Circular linked list (c) Doubly linked list (d) All of these	01	CO2
Q1.3	Which of the following is not an application of priority queue? a) To do list b) Waiting queue in hospital c) Undo operation in text editors d) Resource sharing among users	01	CO1
Q1.4	The data structure required to check whether an expression contains a balanced parenthesis is? a) Stack b) Queue c) Array d) Tree	01	CO2
Q1.5	The operator definition of ADT must have a) Abstract, return data types, operation name , input parameters, precondition , post condition a) Operation name , input parameters, precondition , post condition, value definition c) Operation name , precondition , post condition d) Value definition , abstract, operation name , input parameters, precondition , post condition	01	CO1
Q1.6	Linked lists are not suitable for the implementation of a) Waiting queue b) Bubble sort	01	CO1

	c) Polynomial manipulation d) Family Tree		
Q1.7	Which of the following application makes use of a circular linked list? a) Undo operation in a text editor b) Recursive function calls c) Allocating CPU to processes d) Checking string for palindrome	01	CO2
Q1.8	What does 'stack underflow' refer to? a) Accessing item from an undefined stack b) Adding items to a full stack c) Removing items from an empty stack d) Index out of bounds exception	01	CO2

Q1.9	Which of the following is true about the characteristics of abstract data types?
	i) It exports a type.
	ii) It exports a set of operations.
	
	   a) True, True
	   b) True, False
	   c) False , True
	   d) False , False
		01	CO1

Q1.10	Choose correct output for the following sequence of operations :- push(5), push(8),pop,push(2),push(5),pop,pop,pop,push(1),pop a) 85521 b) 82551 c) 81255 d) 85251	01	CO2
Q2 (a)	Convert the given infix expression into postfix using appropriate data structure. Illustrate the working step by step. A+B*C/D+M+N^P **OR** Write and explain the use of stack in recursive function for calculating factorial of a given number.	05	CO2
Q2 (b)	Explain the insertion process in a doubly ended queue, consider all possible cases. (Assume no restrictions on input or output) **OR** Discuss benefits of Circular queue over normal queue? Explain the Circular Queue concept with suitable example.	05	CO2

Q (3)	Differentiate between Single linked list V/S Double linked list .
	Illustrate following doubly linked list(DLL) functions with the help of neat diagram and Algorithm :-
	   a) Insert_ begin
	   b) Insert_before
	   c) Delete_after
	   d) Delete_end
		(2+8)	CO2