** D.Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY**

**Set-: I**

**Q. Paper Code:**

**23SYCS204304**

**KASABA BAWADA KOLHAPUR-416006**

**(An Autonomous Institute)**

S. Y. B. Tech (CSE), Sem-III

**END SEMESTER EXAMINATION, Jan – 2023.**

**Course Name: Data Structure, Course Code:201CSL204.**

Seat No:

**Day and Date: Monday 23/1/2022.**

**Time: 10.00am to 12.00 pm. Max. Marks- 50**

***Instructions:***

1. *Question No. 1,2 & 3 is compulsory.*
2. *Figure to the right indicate full marks.*

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| **BT** | **CO’s** | **Q. No.** |  | **Marks** |
|  |  | **Q.1** | **All Questions are compulsory** | **20** |
| **1.2** | **CO2** | **a** | Compare working of linear and binary search | **5M** |
| **1,2** | **CO1** | **b** | Describe data structure with its all types and explain all the operations of stack. | **8 M** |
| **3** | **CO3** | c | Write a program for insertion sort. | **7 M** |
|  | | | |  |
|  |  | **Q.2** | **All Questions are compulsory** | **10** |
| **1,2** | **CO3** | **a** | Explain types of linked list with the help of example. | **3** |
| **3** | **CO3** | **b** | Write an algorithm or pseudo code for insertion at beginning and deletion at end of singly linked list.  **OR**  Write an algorithm or pseudo code for insertion at end and deletion at beginning of singly linked list. | **7** |
|  | | | |  |
|  |  | **Q.3** | **All Questions are compulsory** | **10** |
| **3** | **CO4** | **a** | What are B- trees? Construct B tree of order 5 for the list of elements given as follows  1,7,6,2,11,4,8,13,12,5,19,9,18,24,5,12,14,20,21  **OR**  What is AVL tree? Write all the rotation operations of it. | **5** |
| **3** | **CO4** | **b** | Construct Binary Search Tree of following data and apply all the tree traversal techniques on that tree.  Data:- 11,6,8,19,4,10,5,17,43,49,31,60 | **5** |
|  | | | |  |
|  |  | **Q.4** | **Attempt any two out of three questions** | **10** |
| **3** | **CO4** | **a** | Draw the picture of the directed graph specified below:  G=(V,E)  V(G)={1,2,3,4,5,6}  E(G)={(1,2),(2,3),(3,4),(5,1),(5,6),(2,6),(1,6),(4,6),(2,4)}  Obtain the following from the directed graph:  i)Adjacency matrix  ii) Adjacency list | **5** |
| **1,2,3** | **CO3** | **b** | Explain any one following term of Graph with help of suitable example.   1. Breadth First Search 2. Depth First Search | **5** |
| **1,2** | **CO3** | **C** | What is graph? Explain all types of graph with the help of example. | **5** |

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