

**VIT**Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

REG.NO.: 25BCA06165

School of Computer Science Engineering and Information Systems
CONTINUOUS ASSESSMENT TEST - II
WINTER SEMESTER 2025-2026

SLOT: A1+TA1

Programme Name & Branch : BCA
Course Code and Course Name : UBCA105L Data Structures and Algorithms
Faculty Name(s) : Dr.Seetha.R, Dr. E.Vijayan
Class Number(s) : VL2025260502392, 2265
Date of Examination : 15/03/2026
Exam Duration : 90 minutes

Maximum Marks: 50**General instruction(s):**

- Answer All Questions
 - Course Outcomes
- CO3: Choose appropriate linear and non-linear data structures to develop any application
- CO4: Apply the suitable sorting and searching algorithms in real world applications

Q.No.	Question	M	CO	BL
1.	Showing the clear steps, sort the following elements using merge sort: 76, 55, 44, 12, 90, 78, 36, 61, 29, 115, 83, 6, 97	10	CO4	BL3
2.	Write the pseudo code to merge two singly linked lists in sorted order. For example: if L1 and L2 are two given lists L1: 1->3->4->5->Null L2: 2->6->7->Null then the Merged list L: 1->2->3->4->5->6->7->Null	10	CO3	BL6
3.	Using non comparison sort, sort the following elements: 110, 101, 011, 111, 1010, 001, 1001, 100, 010, 1000	10	CO4	BL3
4.	a. Is a linked list a self-referential structure? Justify with suitable example (5) b. If the input to the singly linked list is 1, 2, 3, 4, 5, 6, 7. What is the output of the following code (5) <pre> struct Node { int value; struct Node* next;}; void rearrange(struct Node* list) { struct Node* p; struct Node* q; int temp; if (list == NULL list->next == NULL) { return;} p = list; q = list->next; while (q != NULL) { temp = p->value; p->value = q->value; q->value = temp; p = q->next; q = (p != NULL) ? p->next : NULL;}}</pre>	10	CO3	BL3
5.	Assume that your phone has a contact list in unsorted order. Write a suitable algorithm to scroll through the contacts to get a phone number. If the number is available print it otherwise say 'No'.	10	CO3	BL3
