

**JAYPEE UNIVERSITY-2007**  
**B. TECH DEGREE EXAMINATION**  
**DATA STRUCTURES**  
**(INFORMATION TECHNOLOGY)**

JUNE-2007

TIME-3HOUR  
MARK-100

**ANSWER ALL THE QUESTIONS**

I. Write an algorithm to perform each of the following operations

1. Append an element to the end of the list
2. Concatenate two lists
3. Free all nodes in a list
4. Reverse a list so that the last element becomes the first element and so on.
- 5 Delete the nth element from a list
6. Combine two ordered(ascending or descending) list into one ordered list
7. Form a list containing the union of the element of two unordered lists
8. Form a list containing the intersection of the elements of two lists
9. Insert an element after nth element
10. Delete alternate elements from a list
11. Place the elements of a list in increasing from a list
12. Return the sum of the integers in a list
13. Return number of elements in a list
14. Move node(p) forward n positions in a list.
15. Make a second copy of a list.

II. Write algorithms for above exercise with a list with a header node having the number of nodes in a list.

III. Write a routine `insub(l1,i1,l2,i2, len)` to insert the elements of list `l2` beginning at `i2`th element and continuing for `len` elements into the list `l1` beginning at the point `i1`. No elements of the list `l1` are to be removed or replaced.

If  $i1 > \text{length}(l1) + 1$  or if  $i2 + \text{len} - 1 > \text{length}(l2)$ , or if  $i1 < 1$ , or if  $i2 < 1$  print an error. The list `l2` should remain unchanged.