**Institute of Information Technology & Management**

**Data Structure and Algorithms Using C**

**Question Paper**

**BCA-II(E) Paper Code-106**

Q1. Explain the difference between singly linked list and doubly linked list.

Q2. Define algorithm and state its characteristics.

Q3. Explain data structures and type of data structures.

Q 4. Define hashing. Explain collision resolution technique.

Q 5. Perform merge sort on the following values:

1. 8, 43, 27, 13, 6, 17, 69
2. 18, 2, 39, 47, 25, 29, 2, 12

Q6. a) Explain merge sort with example.

b) Which sorting technique is better and why? Explain with an example.

Q 7. Write an algorithm for bubble sort. Explain by taking an example.

Q 8. An array VAL [1\_\_\_\_\_15] [1\_\_\_\_\_\_10] is stored in the memory with each element requiring 4 bytes of storage. If the base address of array VAL is 1500, determine the location of VAL [12][9] when the array VAL is stored(i) row wise (ii)column wise.

Q 9. Write a function to delete a node from beginning of double linked list.

Q10. Explain sparse matrices and their types with the help of suitable example.

Q11.What is push and pop operations in stack?

Q12. What do you mean by linked list? Write a function to insert and delete a node in linked list.

Q13. Distinguish between stack and queue.

Q14.State the difference between array and linked list.

Q15.Differentiate between linear and non-linear Data Structure.

Q16. Write an algorithm to traverse a linked list.

Q17. What are doubly linked lists?

Q18. Name some operations on Linked Lists

Q19. What is insertion sort?

Q20.What is overflow and under flow condition?

Q21.Name few application of array and linked list

Q22. Explain various formulas to calculate address location in 1-D and 2-D array.

Q23 Differentiate between static and dynamic memory allocation.

Q24.Difference between free() and realloc() function.