MANIT Bhopal
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
END-TERM LAB Exam. (Nov.-2025)

Set-A

1. Write a C++ program for a graphics editor that has a base class **Shape** and two derived classes, **Circle and Rectangle**. The program should allow users to add two shapes using the + operator, which will combine their areas. You must also provide a way to display the area of any shape using a virtual function. Following conditions to be fulfilled:

    *   Overload the + operator in both Circle and Rectangle so that adding two shapes creates a new shape whose area is the sum of the two.

    *   Use runtime polymorphism to store pointers to Shape objects, and call a virtual displayArea() method that prints out the area.

    *   In main(), demonstrate creating two shapes of each kind, adding them, and displaying the area of the result using pointers to Shape.

2. Write a C++ program in which you have to define 2 linked lists each of four nodes using dynamic memory allocation. Every node should have two parts: first int data and second a pointer. Data at the nodes of the linked lists are (4, 8, 11, 17) and (2, 3, 9, 22) respectively. Merge both the liked lists so that in the merged list nodes are arranged in ascending order of their data values.