Lab Test-2
Monday (1-3 pm)

Max Marks: 20 **Time: 1 hour**

ODD SET: Students with odd machine number

Q1[10 Marks]. Define a class that will hold a small set of integers from 0 to 31. An element can be set with the set member function and cleared with the clear member function. The function test is used to tell whether an element is set. Also, add a ***function display()*** to show set contents.

Member functions:

```
void small set::set(int item);      // Set an element in the set
void small_set::clear(int item);    // Clear an element in the set
int small_set::test(void);          // See whether an element is set
```

Sample usage:

```
small_set a_set;

a_set.set(3);      // Set contains [3]
a set.set(5);      // Set contains [3,5]
a_set.set(5);      // Legal (set contains [3,5])

cout << a_set.test(3) << '\n';      // Prints "1"
cout << a_set.test(0) << '\n';      // Prints "0"

a_set.clear(5);    // Set contains [3]
```

The program generates exceptions and appropriate messages in the following cases:

a) Trying to set an element that's already set
b) Trying clear an element that's already clear.

Q2[10 Marks]. Define a function template Search() that looks up a given element in a sorted, numeric array. The array elements are of the type of the template parameter T.
It has three parameters—the value searched of type T, a pointer to the first array element, and the number of array elements. The function template returns the index of the first element in the array that corresponds to the searched value, or –1 if the value cannot be found in the array. Implement the function template for double and char types. Define function template for removing the searched value and display template for displaying the array.

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EVEN SET: Students with even machine number

Q1[10 Marks]. Write a "bankaccount" class with following member functions:-
void account::add_amt(int amount); // Add amount to the account
int account::total(void); // Return the total balance
void account::withdraw_amt(int amount); // reduce amount from account

Update the checkbook class so it generates an exception a) when your balance goes below zero. b) when an amount>5000 is withdrawn c) when an amount is added more than 5 times d) Insufficient balance to withdraw

Q2[10 Marks] Define a function template, Sort(), which sorts a numeric array in ascending order. The array elements are of the type of the template parameter T. The function template has two parameters—a pointer to the first array element, and the number of array elements. There is no return value. Define template functions for char and int types.
Define a display function template to show original and sorted values and a rem_min function to remove minimum value.