② Comparce abstract class and interfaces in terms of multiple inheritance. when would you prefer to use an abstract class and when an interface?

Multiple Inheritance:

• A class cannot extend more than one abstract class, so abstract classes donot support multiple inheritance.

• A class can implement multiple interfaces, So, interfaces support multiple inheritance in java.

When we use an Abstract class:-
— when classes are closely related
— when you want to provide some implemented methods.

— when you want to use instance variables and constructors.

when we use an interface:

— when unrelated classes need to follow a common contract.

— when multiple inheritance is required.

— when you want to achieve 100% abstraction (method declarations only)

use an abstract class for shared base behavior and an interface for defining a common capability across multiple classes.