**[Que-50.11] - What is gradient descent and how does it work?**

### **Gradient Descent**

**Gradient descent** is an optimization algorithm used to minimize the cost function in machine learning and deep learning models. It iteratively adjusts the model parameters to reduce the cost function by computing the gradient (derivative) of the cost function with respect to each parameter and updating the parameters in the opposite direction of the gradient.

#### **How it Works:**

1. **Initialize Parameters**: Start with initial guesses for the model parameters.
2. **Compute Gradient**: Calculate the gradient of the cost function with respect to the parameters.
3. **Update Parameters**: Adjust the parameters in the opposite direction of the gradient by a step size (learning rate).
4. **Repeat**: Repeat steps 2 and 3 until the cost function converges to a minimum value.