TASK 3:

ABOUT A MECHATRONIC SYSTEM :

Electronic Stability Control (ESC) is a vehicle safety system that helps prevent skidding and loss of control by automatically applying brakes to individual wheels and, if necessary, reducing engine power.

Main Components:

- **Sensors**: These are like the car's senses, constantly checking how fast each wheel is spinning, how much the car is tilting, and which direction it's heading versus where you're steering.
- **Control Unit**: This is the brain that interprets data from the sensors. If it senses danger, like the car not going where you want it to, it springs into action.
- **Actuators**: These are the muscles that do the actual work of applying brakes to each wheel as needed to help steer the car correctly.

Example: Imagine you're driving on a wet road and need to make a sudden sharp turn to avoid an obstacle. The car begins to slide sideways (a situation called oversteer). ESC senses this because the direction you're steering doesn't match up with where the car is going. It quickly applies the brakes to just the front or rear wheel on one side of the car, helping to bring the car back in line with your steering. At the same time, if you're going too fast, ESC might reduce engine power to help slow down safely.