**Flight Tests:**

1. Hover test: This test assesses the drone's ability to maintain a stable hover at a fixed altitude. Pilots check for any drifting or instability while the drone is hovering in place. It ensures that the drone's altitude hold and stability control systems are functioning properly.
2. PID Test: Tune formulas for PID.
3. Control responsiveness test: Pilots assess how quickly and accurately the drone responds to commands from the remote controller. This involves testing maneuvers such as ascending, descending, turning, and changing direction to ensure precise control over the drone's movements.
4. Flight stability test: Drones are subjected to various flight conditions, including different wind speeds and directions, to evaluate their stability. Pilots observe how the drone responds to changes in wind and if it can maintain stable flight without erratic behavior or loss of control.
5. GPS functionality test: Drones equipped with GPS undergo tests to verify the accuracy and reliability of their GPS systems. Pilots check for any discrepancies between the drone's reported position and its actual location on a map, ensuring that the GPS is providing accurate navigation data.

**Kill Switch Tests Using Drone:**

1. Functional Test: Before takeoff, it's crucial to verify that the kill switch is easily accessible and operational. This involves physically testing the switch to ensure it can be easily triggered in case of an emergency situation.
2. Remote Activation Test: Using the remote control, initiate the kill switch to ensure its functionality. It's imperative to confirm that the drone immediately ceases all propulsion and enters a safe mode or descends gently upon activation.
3. Range Test: To ensure effectiveness from a distance, conduct a range test of the kill switch. Walk away from the drone while activating the kill switch to verify its functionality at different distances, ensuring it can be operated remotely in emergency situations.
4. Altitude Test: Test the kill switch functionality at different altitudes to ensure its reliability regardless of the drone's height. This ensures that the kill switch can be activated successfully whether the drone is flying at low altitudes or high altitudes.
5. Obstacle Detection Test: Simulate potential obstacles such as trees or buildings and activate the kill switch while the drone is moving towards them. This ensures that the drone halts immediately upon activation, preventing collisions and potential damage.
6. Emergency Landing Test: Besides stopping propulsion, the kill switch should initiate an emergency landing procedure. Conducting this test in various terrain conditions ensures that the drone can safely touch down in emergency situations, minimizing the risk of damage to property or injury to bystanders.
7. Post-Activation Check: After activating the kill switch, conduct a post-activation check to ensure no damage has occurred and that the drone is ready for subsequent flights. This step ensures that the drone remains in a flight-worthy condition after emergency procedures are initiated.

**Keyboard Code Tests:**

### Yaw Control (Rotation)

1. Rotate Left (Yaw Left)
   * Key: Q
   * Test: Press and hold Q to verify the drone rotates counterclockwise. Ensure the rotation is smooth and stops immediately when the key is released.
2. Rotate Right (Yaw Right)
   * Key: E
   * Test: Press and hold E to ensure the drone rotates clockwise. The rotation should be smooth and stop promptly when the key is released.

### Roll Control (Lateral Movement)

1. Roll Left
   * Key: A
   * Test: Press and hold A to verify the drone rolls to the left. Ensure it moves laterally in a controlled manner and stops rolling when the key is released.
2. Roll Right
   * Key: D
   * Test: Press and hold D to ensure the drone rolls to the right. The movement should be lateral, controlled, and cease when the key is released.

### Pitch Control (Forward and Backward Tilt)

1. Pitch Forward
   * Key: W
   * Test: Press and hold W to check that the drone tilts forward, causing forward movement. Ensure the pitch is smooth and stops when the key is released.
2. Pitch Backward
   * Key: S
   * Test: Press and hold S to ensure the drone tilts backward, resulting in backward movement. The pitch should be smooth and halt when the key is released.

Throttle Control (Altitude Control)

1. Increase Throttle (Ascend)
   * Key: Arrow Up
   * Test: Press and hold the Arrow Up key to verify the drone ascends smoothly. Ensure the altitude increases steadily and stops rising when the key is released.
2. Decrease Throttle (Descend)
   * Key: Arrow Down
   * Test: Press and hold the Arrow Down key to ensure the drone descends smoothly. The descent should be steady and cease when the key is released.

**Before Flight Test:**

1. Pre-flight checks: Before every flight, pilots should perform a thorough inspection of the drone. This includes checking the battery levels to ensure they are sufficient for the planned flight duration, inspecting propellers for any damage or wear, verifying that motors are functioning correctly, and ensuring that all other critical components such as the flight controller and sensors are operational.