Smart Pot Automatic Plant Watering System Unit Test Plan

1) Inspect the board visually: ensure everything seems to be as designed.
2) Check for shorts between power and ground.
3) Connect the board to a bench power supply and see that voltage is correct and there is no current.
4) Populate the power system (voltage regulator) and measure voltage on all pads expected to have power.
5) Add the microcontroller, bypass caps, reset button, and ensure there are no solder bridges, and the microcontroller pins are actually connected to the pads we expect (where the sensors, etc. will be soldered).
6) Add the microcontroller programming components and verify the microcontroller can be successfully programmed.
7) Populate the USB-UART bridge section and program the microcontroller to output messages to the USB.
8) Populate the ESP32/WiFi module and ensure connectivity at the place we expect.
9) Add ESP32 programming features (USB-UART and JTAG) and verify programming.
10) Populate the 2x 7-segment display and program the microcontroller to verify functionality.
11) Populate the LED indicators and the push button and program the microcontroller to verify the functionality of these components.
12) Populate the temperature sensor and ensure the microcontroller can detect changes in temperature.
13) Populate the limit switch for water level monitoring and program the microcontroller to detect button events.
14) Populate the soil moisture sensor and program the microcontroller to read the sensor.
15) Populate the pumping system and verify the microcontroller can cause the pump to activate.
16) Integrate (via the microcontroller) to achieve full desired functionality.