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Control System Assignment A

1. Which is better open loop system or close loop feedback?

Answer:

A better system to use is a close feedback system because if you use the system it will provide corrections if the output is not appropriate (experiencing interference) you have given corrections the output that will be obtained can be more accurate because the output value is close to the set point while if you use an open loop system, the output produced will not be evaluated either if you get interference or not.

2. Is the following system open loop or closed loop?

- Plowing the land with a tractor
- Drip irrigation
- Drying machine
- Room air conditioner (AC)

Answer:

- Plowing the land with a tractor

Open loop, if plowing the land using a tractor there is no evaluation or feedback.

Close loop, if the plowing of land using a tractor is carried out repeatedly according to the results of the optical evaluation from the operator as desired

- Drip irrigation

Open loop, if the drip irrigation system runs only once (no evaluation or feedback on the soil).

Close loop, if the drip irrigation system uses sensors as components to measure the level of moisture content in the soil so that groundwater is sufficient.

- Drying machine

Close loop, the drying machine system has temperature and humidity sensor components to detect the output produced according to the setpoint or not.

- Room air conditioner (AC)

Close loop, the AC system has sensors that can adjust and read the output so that it gets the same output as the input.

3. Determine the system components in question no. 2!

- **Plowing the land with a tractor**

Open loop:

Input : power

Controller : operator
Plant : plough
Output : Pirated soil

Close loop:

Input : power
Controller : operator
Plant : plough
Output : Pirated soil
Sensor : Operator optical device

- **Drip irrigation**

Open loop:

Input : power source
Controller : water pump
Plant : nozzle
Output : soil moisture level

Close loop:

Input : power source
Controller : water pump
Plant : nozzle
Output : soil moisture level
Sensor : soil moisture sensor

- **Drying machine**

Close loop

Input : power source
Controller : arduino Uno
Actuator : solid state relay (ssr)
Plant : heater
Output : high/low temperature
Sensor : air temperature and humidity sensor

- **Room air conditioner (AC)**

Close loop

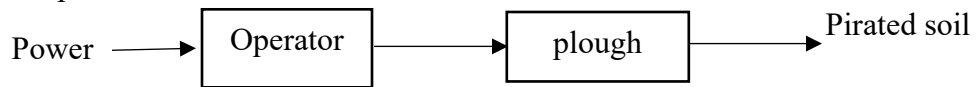
Input : power source
Controller : remote controller
Plant : compressor or condenser
Output : thermostat/temperature
Sensor : temperature

4. Draw the control system of questions no. 2 and 3!

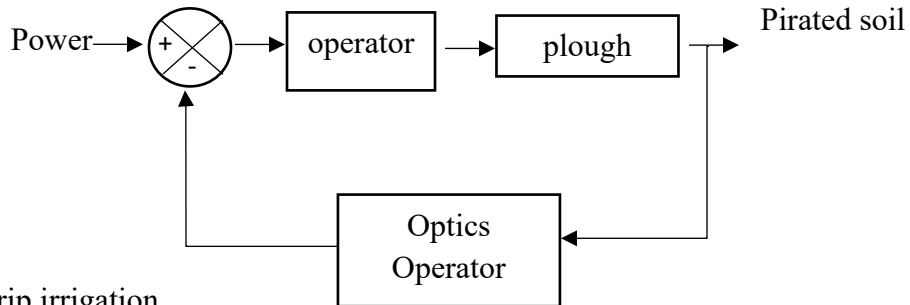
Answer:

- Plowing the land with a tractor

Open loop:

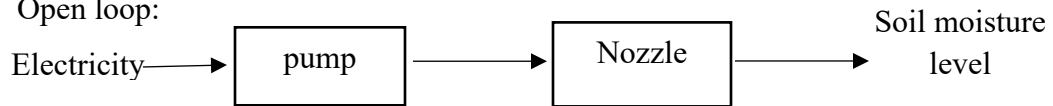


Close loop:

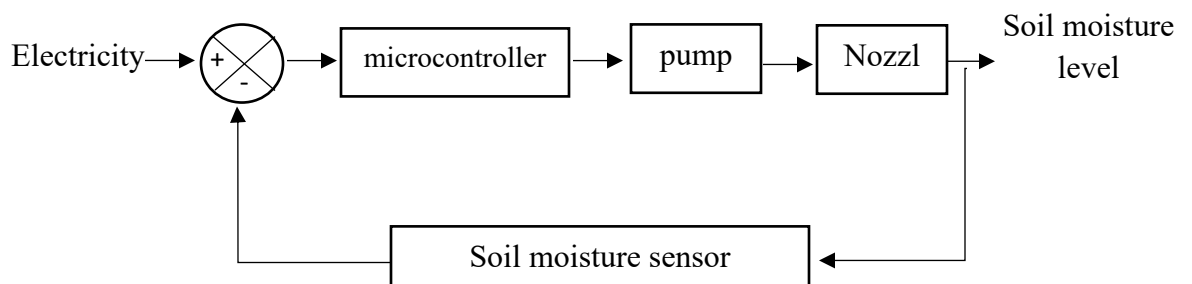


- Drip irrigation

Open loop:

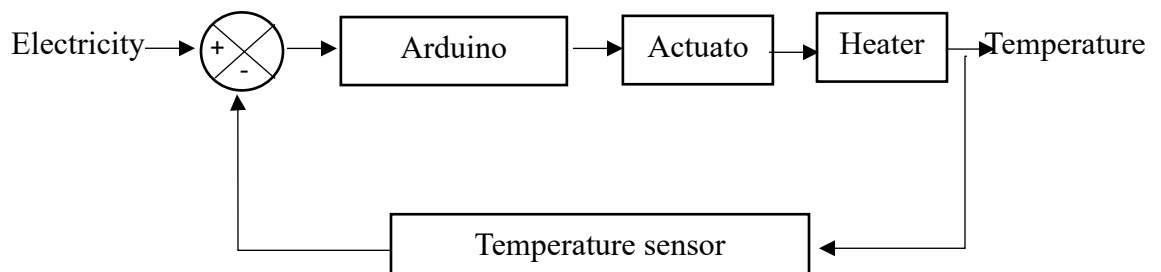


Close loop:



- Drying machine

Close loop:



- Room air conditioner (AC)

Close loop:

