

GO-DOWN WIRING

Ex. No. : 7

Date : 29/11/2021

Aim

To understand the wiring of go-down / tunnel wiring circuit.

Materials Required

S. No.	Name of the apparatus	Range / Type	Quantity
1	Incandescent Lamp	230 V, 25 W	3 Nos.
2	Lamp holder	230 V, Level	3 Nos.
3	Switch Box	4" x 4"	4 Nos.
4	2 way switch	230 V, 5 A	3 Nos.
5	1 way switch	230 V, 5 A	1 No.
6	P. V. C. casing capping	1/4"	As required
7	Wooden Board	4' x 3.5'	1 No.
8	Wires	1 sq. mm"	As required

Tools Required

Screw driver, Wire stripper, Hacksaw, combination plier, drilling machine, electrician knife

Theory

Godown wiring uses to operate lamps/loads in a sequential manner, where only one load operates at a time. As its name implies "Godown wiring", it is used in godowns, tunnel like structures, long passages, etc. due to the advantage of the circuit, where light is only required for passage or it requires only at one position at a time.

Procedure

1. Collect the materials required for this experiment.
2. Draw the layout of the given circuit diagram in the circuit board.
3. Fix the necessary materials, by using drilling machine in the layout board.
4. Terminal 2 of the bulb L1 is connected to neutral point (N) and another terminal 1 is connected to terminal 1 of switch S2.
5. Terminal 1 of the switch S1 is connected to the phase line (P).
6. Now, the terminal 2 of switch S1 is connected with terminal 2 of switch S2.
7. The terminal 3 of switch S2 is connected with terminal 2 of switch S3.
8. And terminal 3 of Switch S3 is connected with terminal 2 of switch S4.
9. After that, the terminal 3 of switch S4 is connected with terminal 1 of Bulb L4.

Precautions

1. Energize the circuit with the presence of Lab instructor / Faculty.
2. No part of a live circuit should be touched by the bare hand.
3. Keep the body, or any part of it, out of the circuit.

4. Keep the work area and workbench clear of items not used in the experiment.
5. When disassembling a circuit, first remove the source of power.

Fuse Rating Calculations

Power drawn by the circuit = 60 watts

Voltage of the circuit = 230 volts

$$P = V I \cos \phi$$

$$P = V \times I \times 1 \text{ (Assuming } \cos \phi = 1 \text{ for resistive load)}$$

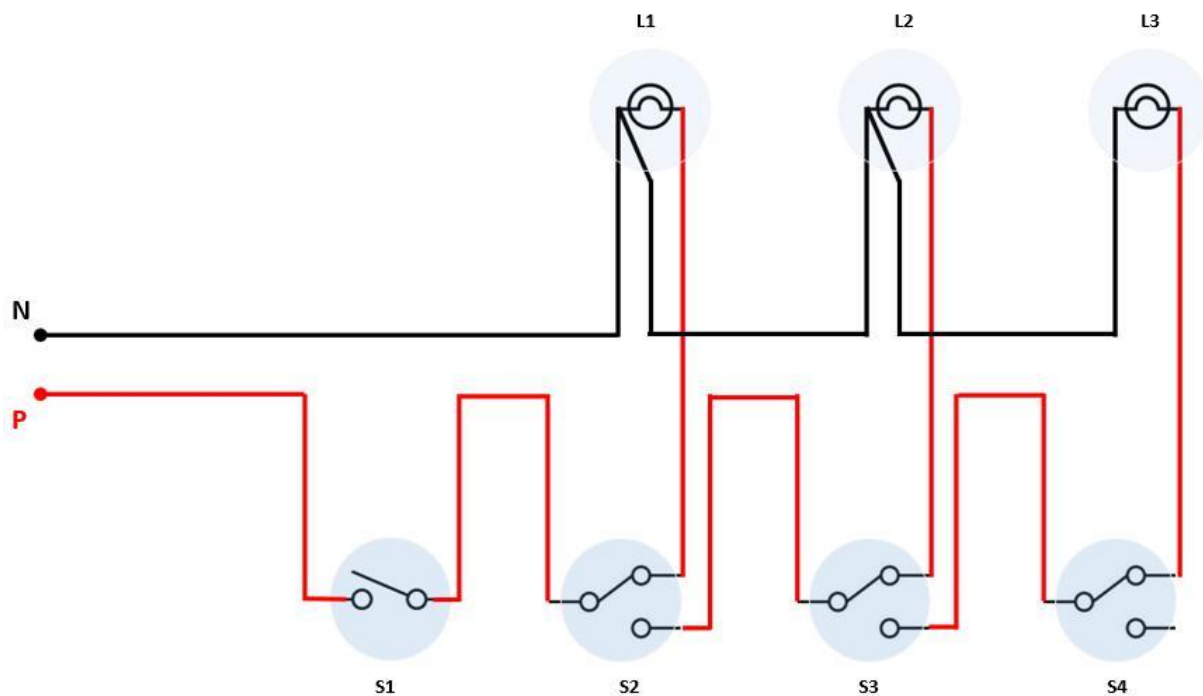
Current in the circuit (I) = power (P) / Voltage (V)

$$= 60 \text{ W} / 230 \text{ V} = 0.260 \text{ AMP.}$$

Fuse rating of the circuit = rounding off the current to the nearest 5 =

5A (Normally fuses are available in the ratings of 5A, 10A and etc.)

Circuit Diagram



S1 : 1-way switch, S2 – S4 : 2-way switches. L1 – L3 : 25W, 230V Lamps

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Observation

Condition No	Expected conditions							Observed conditions						
	S1	S2	S3	S4	L1	L2	L3	S1	S2	S3	S4	L1	L2	L3
1	ON	1	1	1	ON	OFF	OFF	ON	1	1	1	ON	OFF	OFF
2		2	1	1	OFF	ON	OFF	ON	2	1	1	OFF	ON	OFF
3		1	2	1	OFF	OFF	ON	ON	1	2	1	OFF	OFF	ON
4	OFF	1	1	1	OFF	OFF	OFF	ON	1	1	1	OFF	OFF	OFF
5		2	1	1	OFF	OFF	OFF	ON	2	1	1	OFF	OFF	OFF
6		1	2	1	OFF	OFF	OFF	ON	1	2	1	OFF	OFF	OFF

Result

The above circuit is used to wire a go down. This circuit has one main switch and three control switches. The main switch controls the current to the whole circuit, while the control switches turn on the successive bulb. While walking towards the end, the lights turn on one by one. This also happens when walking back.

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