ECE132: Basic Electrical and Electronics Engineering Lab

Experiment 3:

a) To compare incandescent lamp, fluorescent lamp, CFL and LED based light source for its efficiency

b) Switching control of single lamp by using four 2 way switches.

Comparison of different lighting sources

Over the last few years, advances in technology have brought about innovations in how to light our homes and commercial buildings. In the beginning, all we had was the standard, incandescent light bulb. Now we have compact fluorescent lamps (CFL) and light emitting diodes or LED for short. We are going to tackle the question… which light bulb type reigns supreme

Comparison of different lighting sources

Comparison of different lighting sources

Lumens (Brightness)	LED Watts (Viribright)	CFL Watts	Incandescent Watts
400 – 500	6 – 7W	8 – 12W	40W
650 – 850	7 – 10W	13 – 18W	60W
1000 – 1400	12 – 13W	18 – 22W	75W
1450-1700+	14 – 20W	23 – 30W	100W
2700+	25 – 28W	30 – 55W	150W

Comparison of different lighting sources

Calculate the efficiency

1) First convert the lumen in to the output watts using the formula

   1Lumen=0.00147W

2) Calculate the efficiency, Output watts/ Inputs watts

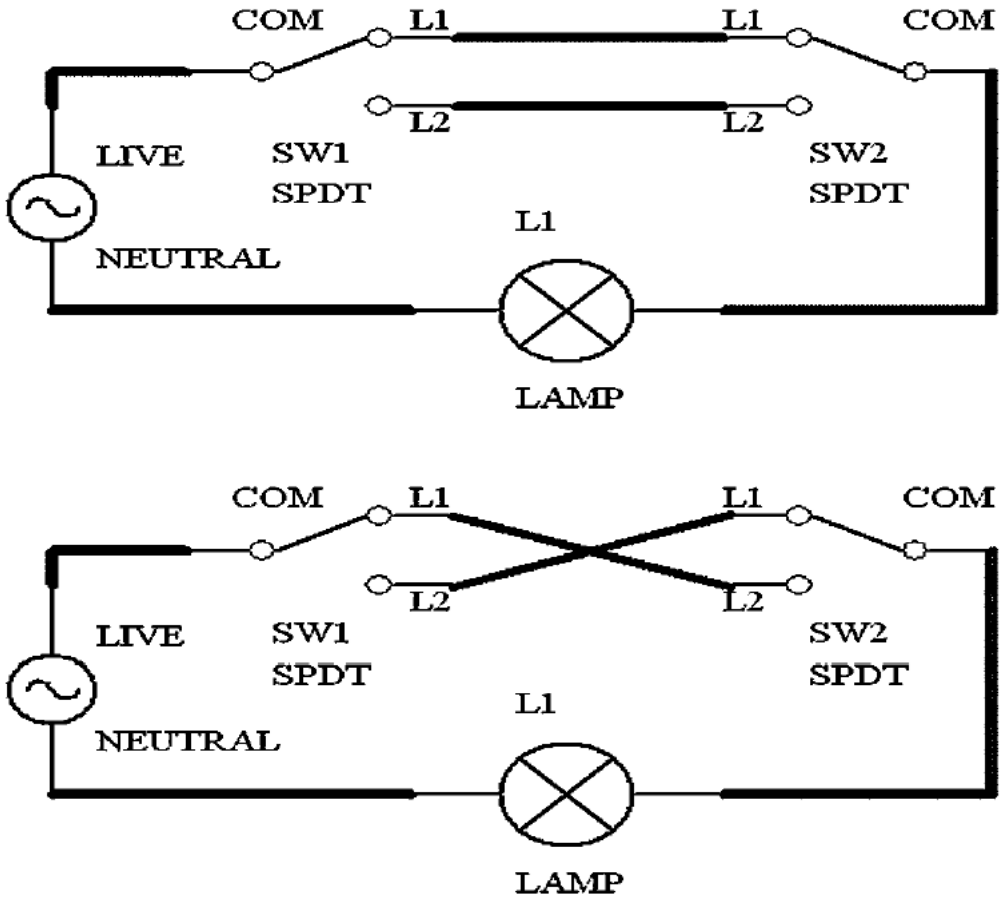
Comparison of different lighting sources

Observation Table

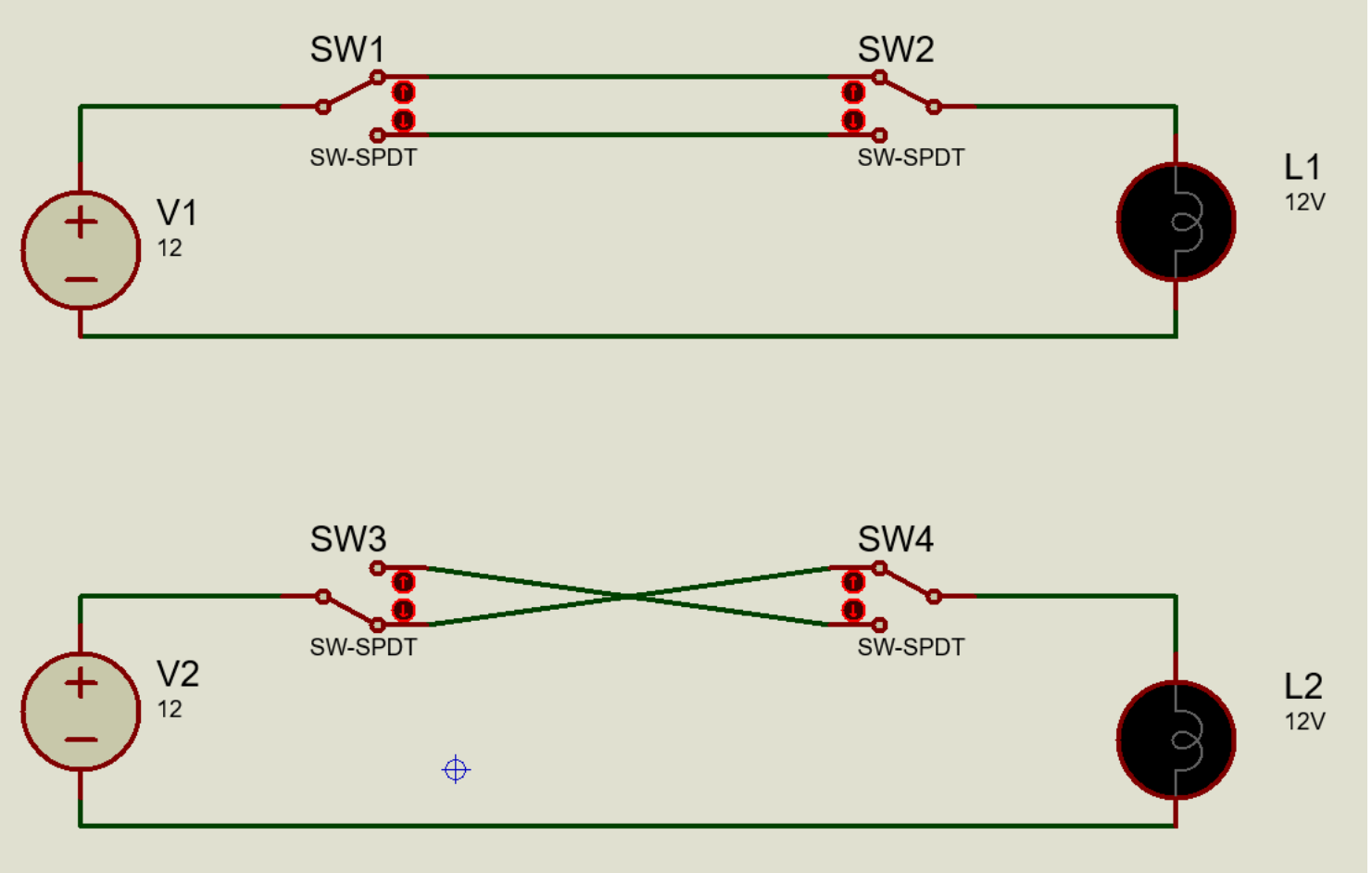
Sr. No	Type of Bulb	Power Input(W) P=VI	Power Outage Rating(W) Conversion Factor 1Lumen=0.0 0147W	Percentage Efficiency (%)

Two Way Switching

2 way switching means having two or more switches in different locations to control one lamp. They are wired so that operation of either switch will control the light. This arrangement is often found in stairways or in long hallways with a switch at either end. The switches can be connected either in cross or parallel in order to have different switching conditions.



Two Way Switching



Thanks You