

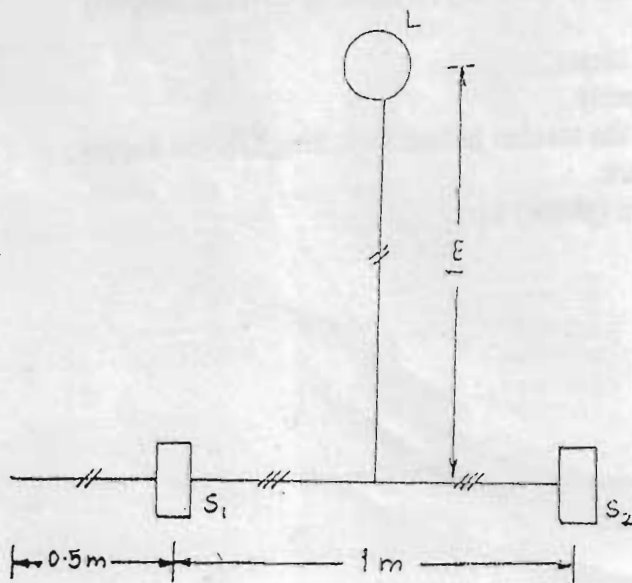
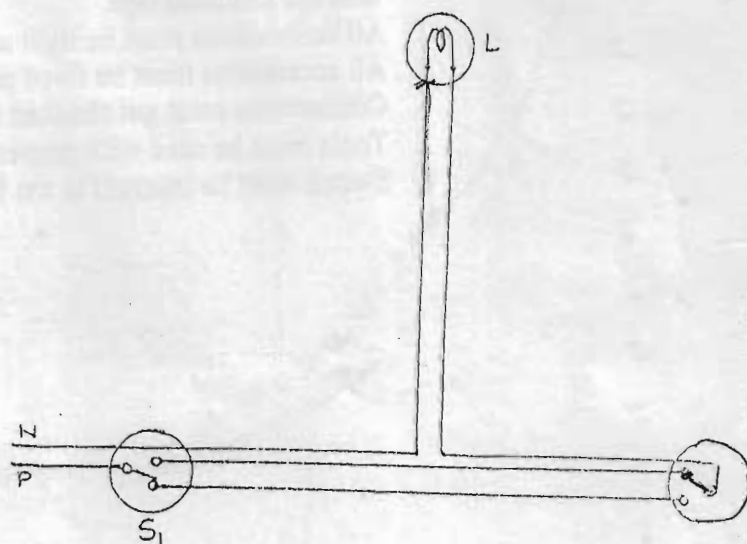
Experiment No: 1

Aim: To control one lamp from two different places using 2-way switches as in Stair-case wiring.

Tools Required: Screw driver (12"), Pliers (8"), Wire cutter & stripper, Electrician Knife (6"), Hand Saw (12"), Line Tester (500V)

Material Required:

S.No.	Material	Specification	Quantity
1.	PVC Insulated Copper Wire	3/20 S.W.G	
2.	2-way Switch	240V, 6A	
3.	Bulb Holder	Batten type	
4.	Round Block	P.V.C.	
5.	Casing-Capping	P.V.C. 0.75"	
6.	Wooden Screw	2"	
7.	Wooden Screw	(1/2)"	
8.	Gang-Box	1-way P.V.C.	
9.	Bulb	100W, 240V	
10.	Insulation Tape	P.V.C.	

Route DiagramWiring Diagram

Procedure:

1. Make the route diagram on the wooden board by deciding proper placement of bulb and switches..
2. Cut the casing-capping of required length.
3. Fix the casing on the route defined with the help of wooden screws.
4. Lay the wires of proper length in the casing.
5. Fix the switches on the gang boxes, and bulb holder on the round block.
6. Make connections of the bulb and the switches, and fix the switches & bulb holder on their place with the help of wooden screws.
7. Get your connections checked by the teacher, and then switch ON the supply & test your wiring.

Estimating & Costing:

S.No.	Material	Specification	Quantity	Rate	Cost
1.	PVC Insulated Copper Wire	3/20 S.W.G.			
2.	2-way Switch	240V, 6A			
3.	Bulb Holder	Batten type			
4.	Round Block	P.V.C.			
5.	Casing-Capping	P.V.C. 0.75"			
6.	Wooden Screw	2"			
7.	Wooden Screw	(1/2)"			
8.	Gang-Box	1-way P.V.C.			
9.	Bulb	100W, 240V			

Precautions:

1. Joints must not be there in the wires, if there any; it must be covered properly with the insulated tape.
2. All connections must be tight and intact.
3. All accessories must be fixed properly.
4. Connections must get checked by the teacher before switching ON the supply.
5. Tools must be used with proper care.
6. Switch must be inserted in the Live (phase) wire.

## QUESTIONS

1. What are the precautions to be observed to prevent electrical accidents?
2. Under what conditions are electric shock becomes fatal? What are the basic shock treatment for a victim of electric shock?

Aim: To control one lamp from two different places using 1-way switches as in Bed switch wiring.

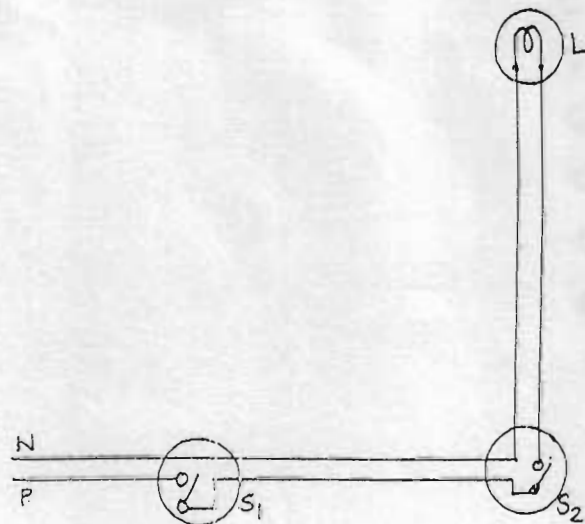
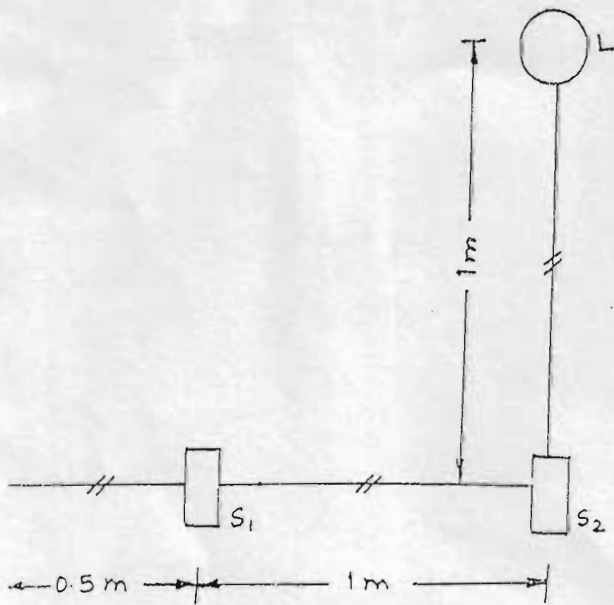
Tools Required: Screw driver (12"), Pliers (8"), Wire cutter & stripper, Electrician Knife (6"), Hand Saw (12"), Line Tester (500V)

Material Required:

S.No.	Material	Specification	Quantity
1.	PVC Insulated Copper Wire	3/20 S.W.G.	
2.	1-way Switch	240V, 6A	
3.	Bulb Holder	Batten type	
4.	Round Block	P.V.C.	
5.	Casing-Capping	P.V.C. 0.75"	
6.	Wooden Screw	2"	
7.	Wooden Screw	(1/2)"	
8.	Gang-Box	1-way P.V.C.	
9.	Bulb	100W, 240V	
10.	Insulation Tape	P.V.C.	

Route Diagram

Wiring Diagram



Procedure:

1. Make the route diagram on the wooden board by deciding proper placement of bulb and switches..
2. Cut the casing-capping of required length.
3. Fix the casing on the route defined with the help of wooden screws.
4. Lay the wires of proper length in the casing.
5. Fix the switches on the gang boxes, and bulb holder on the round block.
6. Make connections of the bulb and the switches, and fix the switches & bulb holder on their place with the help of wooden screws.
7. Get your connections checked by the teacher, and then switch ON the supply & test your wiring.

Estimating & Costing:

S.No.	Material	Specification	Quantity	Rate	Cost
1.	PVC Insulated Copper Wire	3/20 S.W.G.			
2.	1-way Switch	240V, 6A			
3.	Bulb Holder	Batten type			
4.	Round Block	P.V.C.			
5.	Casing-Capping	P.V.C. 0.75"			
6.	Wooden Screw	2"			
7.	Wooden Screw	(1/2)"			
8.	Gang-Box	1-way P.V.C.			
9.	Bulb	100W, 240V			

Precautions:

1. Joints must not be there in the wires, if there any; it must be covered properly with the insulated tape.
2. All connections must be tight and intact.
3. All accessories must be fixed properly.
4. Connections must get checked by the teacher before switching ON the supply.
5. Tools must be used with proper care.
6. Switch must be inserted in the Live (phase) wire.

## QUESTIONS

1. With a neat sketch briefly explain a standard wire gauge.
2. What are the various types of wires used in electrical wiring?



### Experiment No: 3

Aim: To control two lamps from two different places using 1-way switches.

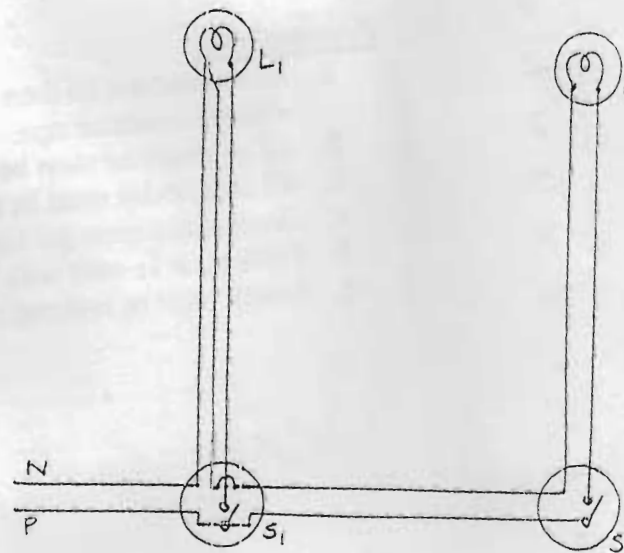
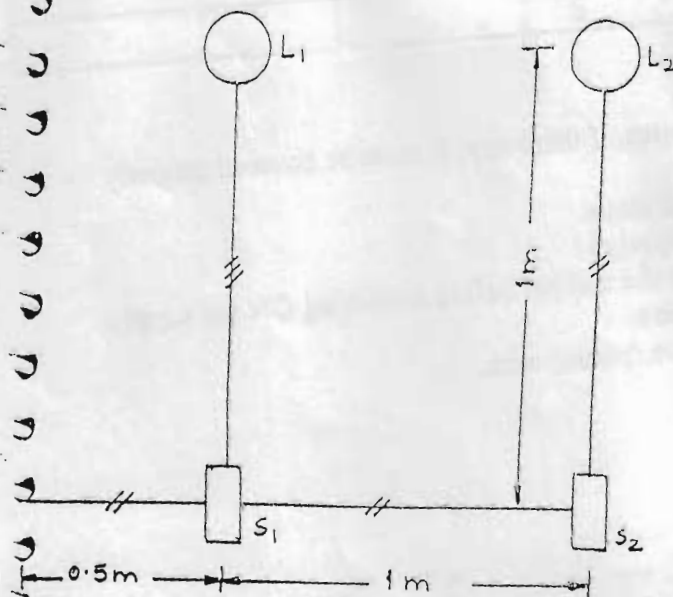
Tools Required: Screw driver (12"), Pliers (8"), Wire cutter & stripper, Electrician Knife (6"), Hand Saw (12"), Line Tester (500V)

#### Material Required:

S.No.	Material	Specification	Quantity
1.	PVC Insulated Copper Wire	3/20 S.W.G.	
2.	1-way Switch	240V, 6A	
3.	Bulb Holder	Batten type	
4.	Round Block	P.V.C	
5.	Casing-Capping	P.V.C. 0.75"	
6.	Wooden Screw	2"	
7.	Wooden Screw	(1/2)"	
8.	Gang-Box	1-way P.V.C.	
9.	Bulb	100W, 240V	
10.	Insulation Tape	P.V.C.	

#### Route Diagram

#### Wiring Diagram



**Procedure:**

1. Make the route diagram on the wooden board by deciding proper placement of bulb and switches.
2. Cut the casing-capping of required length.
3. Fix the casing on the route defined with the help of wooden screws.
4. Lay the wires of proper length in the casing.
5. Fix the switches on the gang boxes, and bulb holder on the round block.
6. Make connections of the bulb and the switches, and fix the switches & bulb holder on their place with the help of wooden screws.
7. Get your connections checked by the teacher, and then switch ON the supply & test your wiring.

**Estimating & Costing:**

S.No.	Material	Specification	Quantity	Rate	Cost
1.	PVC Insulated Copper Wire	3/20 S.W.G.			
2.	1-way Switch	240V, 6A			
3.	Bulb Holder	Batten type			
4.	Round Block	P.V.C.			
5.	Casing-Capping	P.V.C. 0.75"			
6.	Wooden Screw	2"			
7.	Wooden Screw	(1/2)"			
8.	Gang-Box	1-way P.V.C.			
9.	Bulb	100W, 240V			

**Precautions:**

1. Joints must not be there in the wires, if there any; it must be covered properly with the insulated tape.
2. All connections must be tight and intact.
3. All accessories must be fixed properly.
4. Connections must get checked by the teacher before switching ON the supply.
5. Tools must be used with proper care.
6. Switch must be inserted in the Live (phase) wire.



## QUESTIONS

1. Loads in a house are as follows:-  
Lamp load- 2000W, Heater load- 3000W, Fan load- 500W. How many circuits have to be provided? Estimate the conductor size required for various circuits.
2. Distinguish between feeder distribution and service mains. What are the types of wires used for service mains?

### Experiment No: 4

Aim: To make connections of a 40 watt fluorescent tube-light.

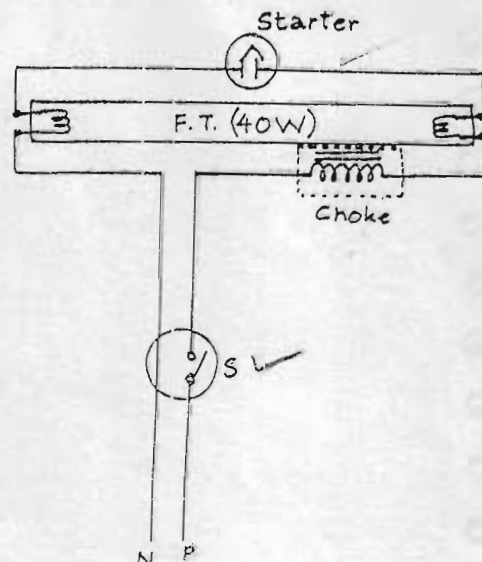
Tools Required: Screw driver (12"), Pliers (8"), Wire cutter & stripper, Electrician Knife (6"), Hand Saw (12"), Line Tester (500V)

#### Material Required:

S.No.	Material	Specification	Quantity
1.	PVC Insulated Copper Wire	3/20 S.W.G.	
2.	1-way Switch	240V, 6A	
3.	Tube Holder	4'	
4.	fluorescent tube-light	40 watt	
5.	Casing-Capping	P.V.C. 0.75"	
6.	Wooden Screw	2"	
7.	Wooden Screw	(1/2)"	
8.	Choke	40 watt	
9.	Starter	40 watt	
10.	Insulation Tape	P.V.C.	

#### Route Diagram

#### Wiring Diagram



Procedure:

1. Make the route diagram on the wooden board by deciding proper placement of bulb and switches..
2. Cut the casing-capping of required length.
3. Fix the casing on the route defined with the help of wooden screws.
4. Lay the wires of proper length in the casing.
5. Fix the switches on the gang boxes, and bulb holder on the round block.
6. Make connections of the bulb and the switches, and fix the switches & bulb holder on their place with the help of wooden screws.
7. Get your connections checked by the teacher, and then switch ON the supply & test your wiring.

Estimating & Costing:

S.No.	Material	Specification	Quantity	Rate	Cost
1.	PVC Insulated Copper Wire	3/20 S.W.G.			
2.	1-way Switch	240V, 6A			
3.	Tube Holder	4'			
4.	fluorescent tube-light	40 watt			
5.	Casing-Capping	P.V.C. 0.75"			
6.	Wooden Screw	2"			
7.	Wooden Screw	(1/2)"			
8.	Choke	40 watt			
9.	Starter	40 watt			
10.	Insulation Tape	P.V.C.			

Precautions:

1. Joints must not be there in the wires, if there any; it must be covered properly with the insulated tape.
2. All connections must be tight and intact.
3. All accessories must be fixed properly.
4. Connections must get checked by the teacher before switching ON the supply.
5. Tools must be used with proper care.
6. Switch must be inserted in the Live (phase) wire.

## QUESTIONS

1. What are the functions of the starter and choke in a fluorescent lamp circuit?
2. Explain the working of a thermal starter.
3. Is it advisable to use fluorescent tubes in the industrial installations at shop floor where moving parts are present? Why?