Indian electrical power scenario, House-hold wiring and apparatus ratings

Lab/session-1: Assignment-1 (DDN)

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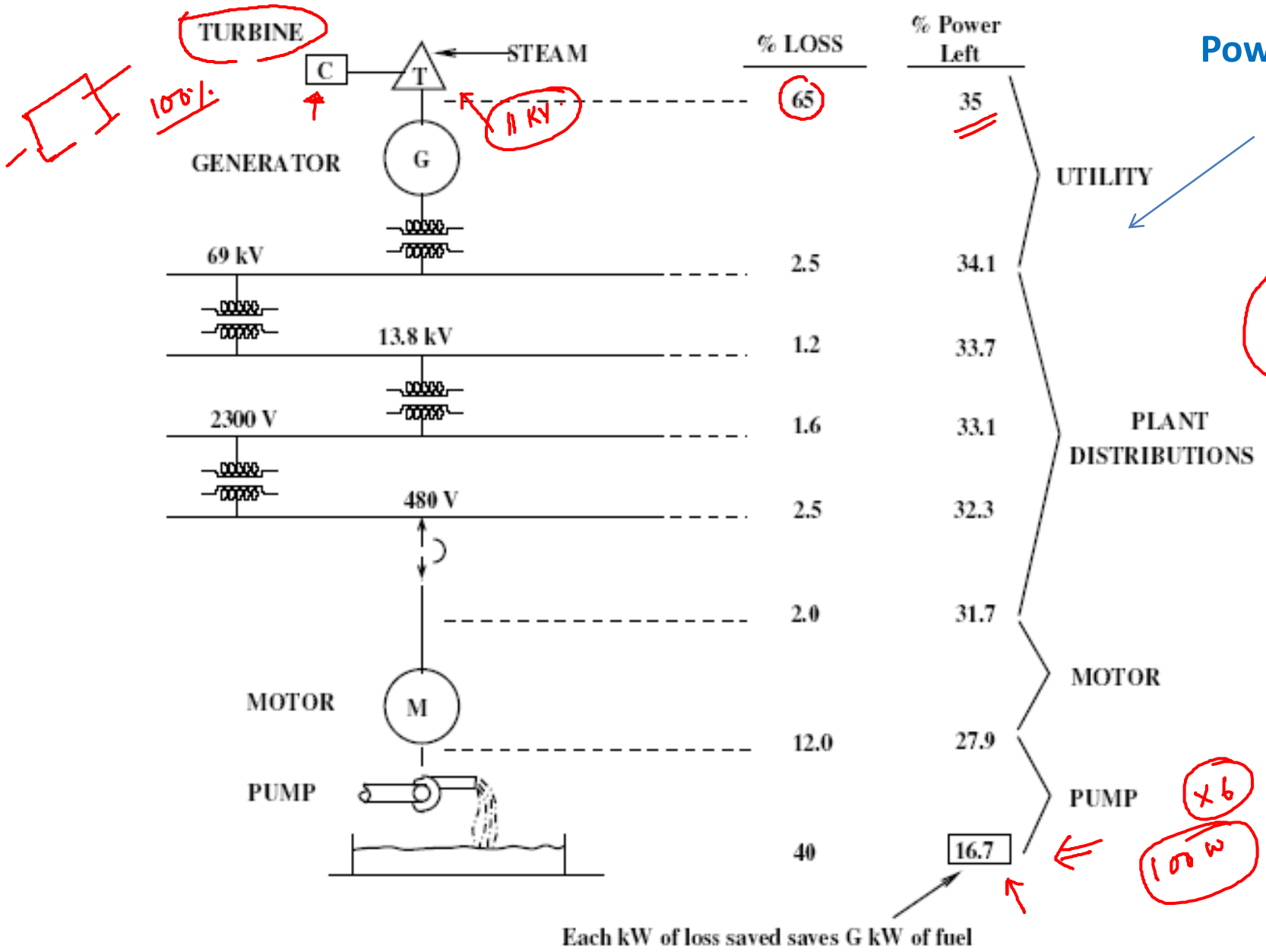
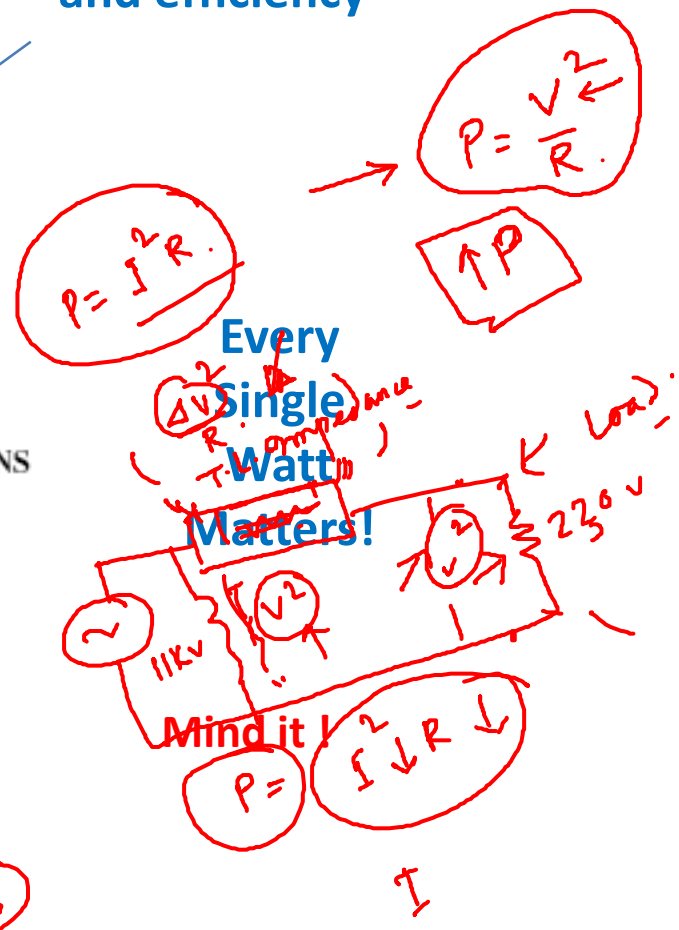
Power system network and efficiency

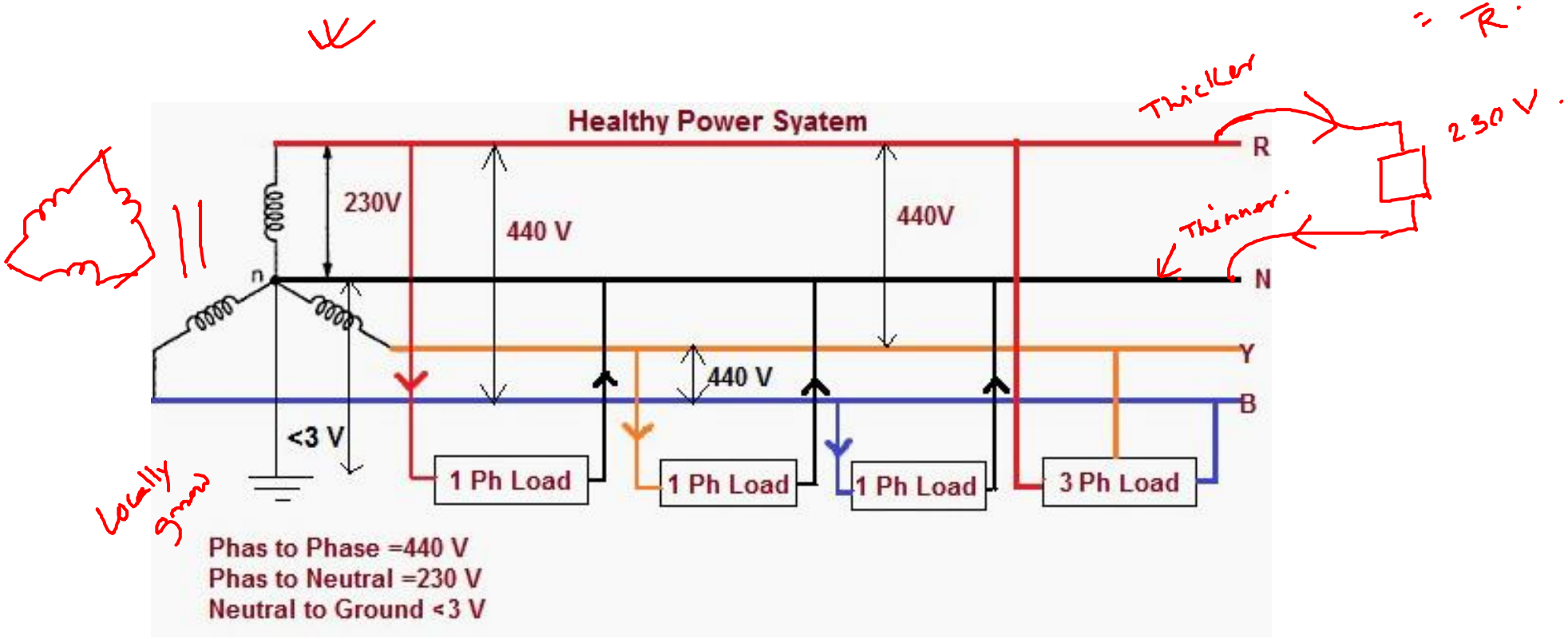


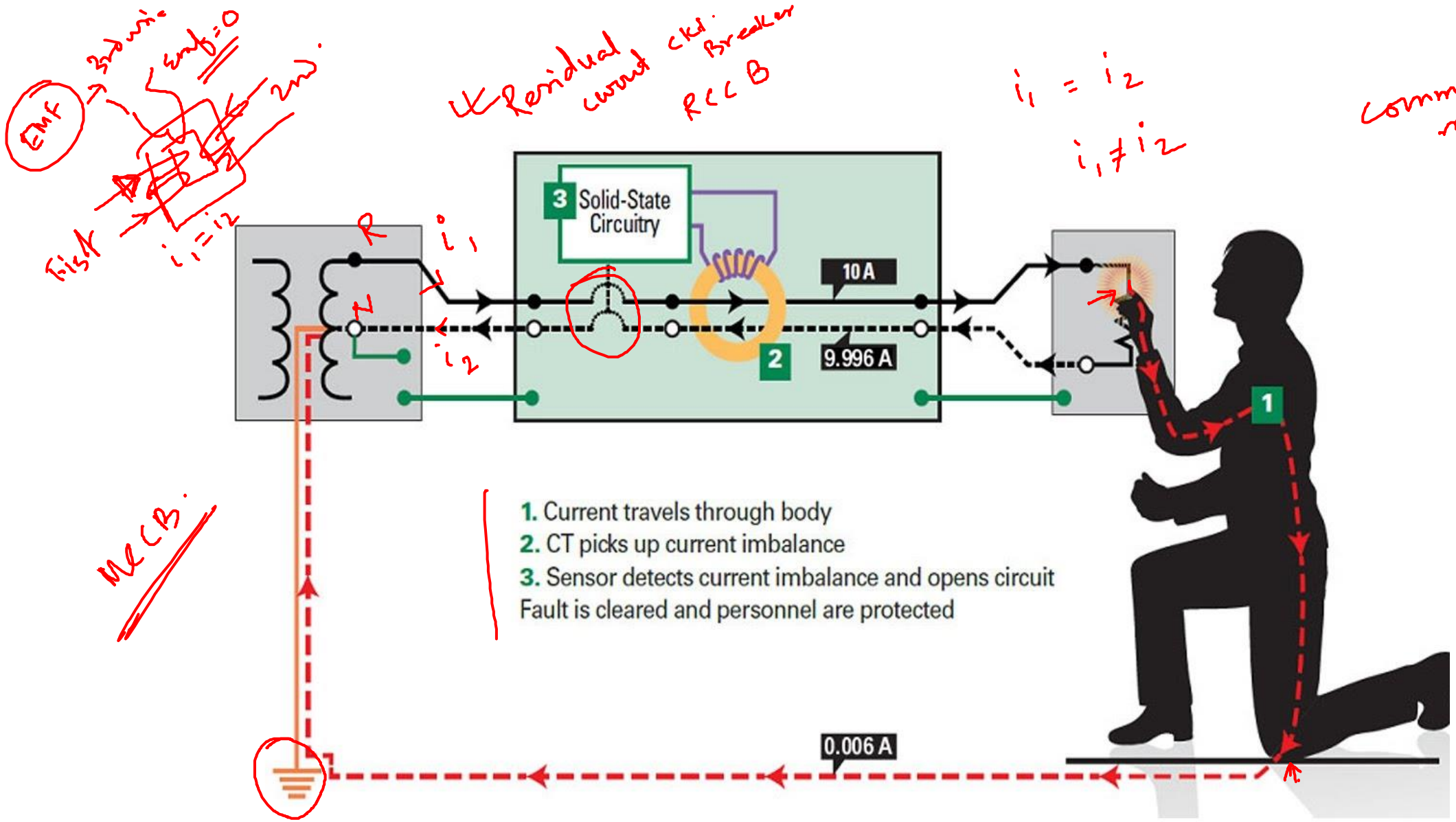


Please turn-off electrical appliances when you don't need them

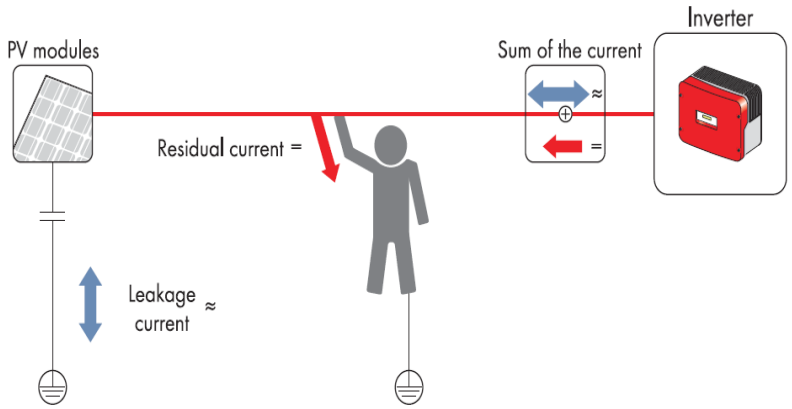
Every watt that you will save is actually more than 7 W equivalent in overall energy chain

Power at home!



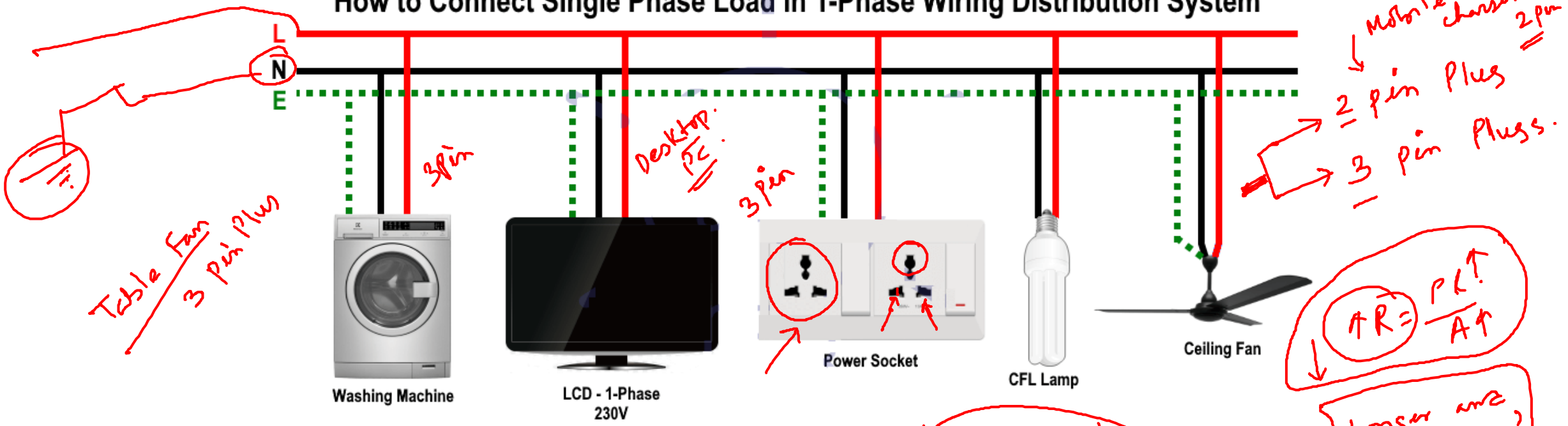

3 Solid-State Circuitry
10 A
2
9.996 A
1
0.006 A
1. Current travels through body
2. CT picks up current imbalance
3. Sensor detects current imbalance and opens circuit
Fault is cleared and personnel are protected

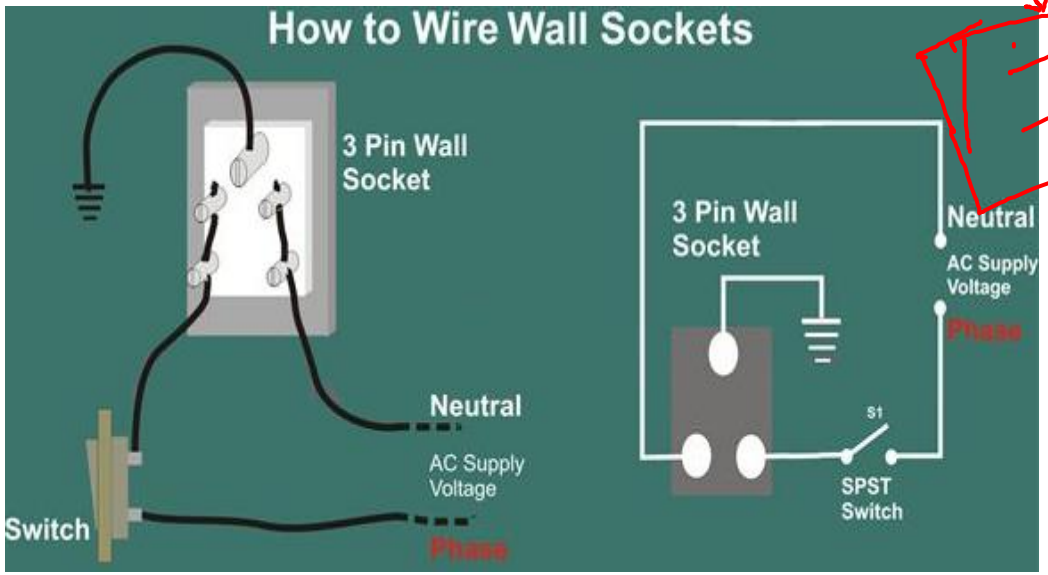
Electric current	Effect
Below 1 mA	Not perceptible
1 mA	Threshold of feeling, tingling
5 mA	Slight shock. Not painful. Average individual can let go. Involuntary reaction can lead to indirect injuries
6-30 mA	Painful shocks. Loss of muscle control, 'can't let go'
50 to 150 mA	Extreme pain. Respiratory arrest. Muscles reactions. Possible Death.
1 to 4.3 A	Fibrillation of the heart. Muscular contraction and nerve damage occur. Likely death.
10 A	Cardiac arrest, severe burns. Death is probable

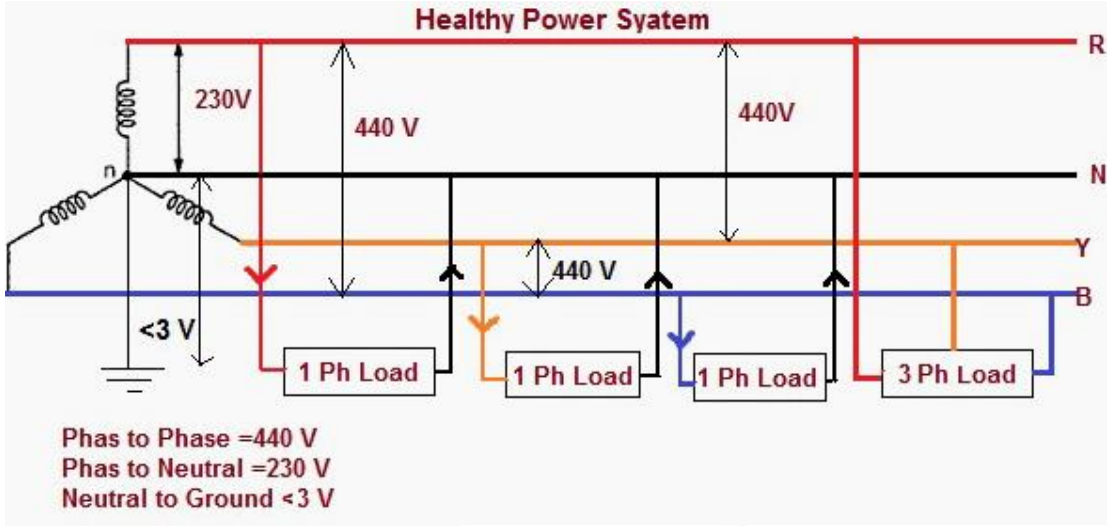


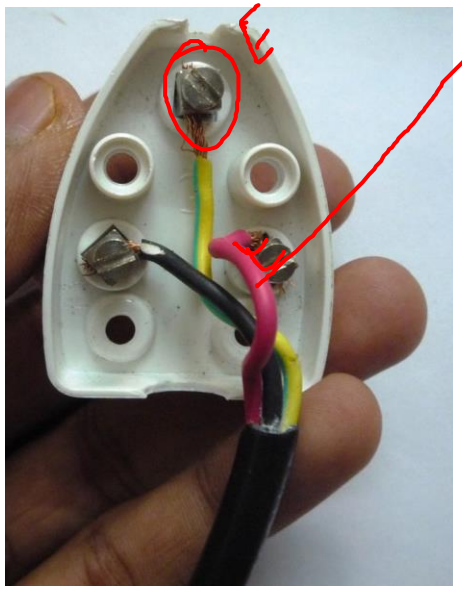
Residual current sudden change	Maximum time to inverter disconnection from the mains
30 mA	0.3 seconds
60 mA	0.15 seconds
150 mA	0.04 seconds

How to Connect Single Phase Load in 1-Phase Wiring Distribution System

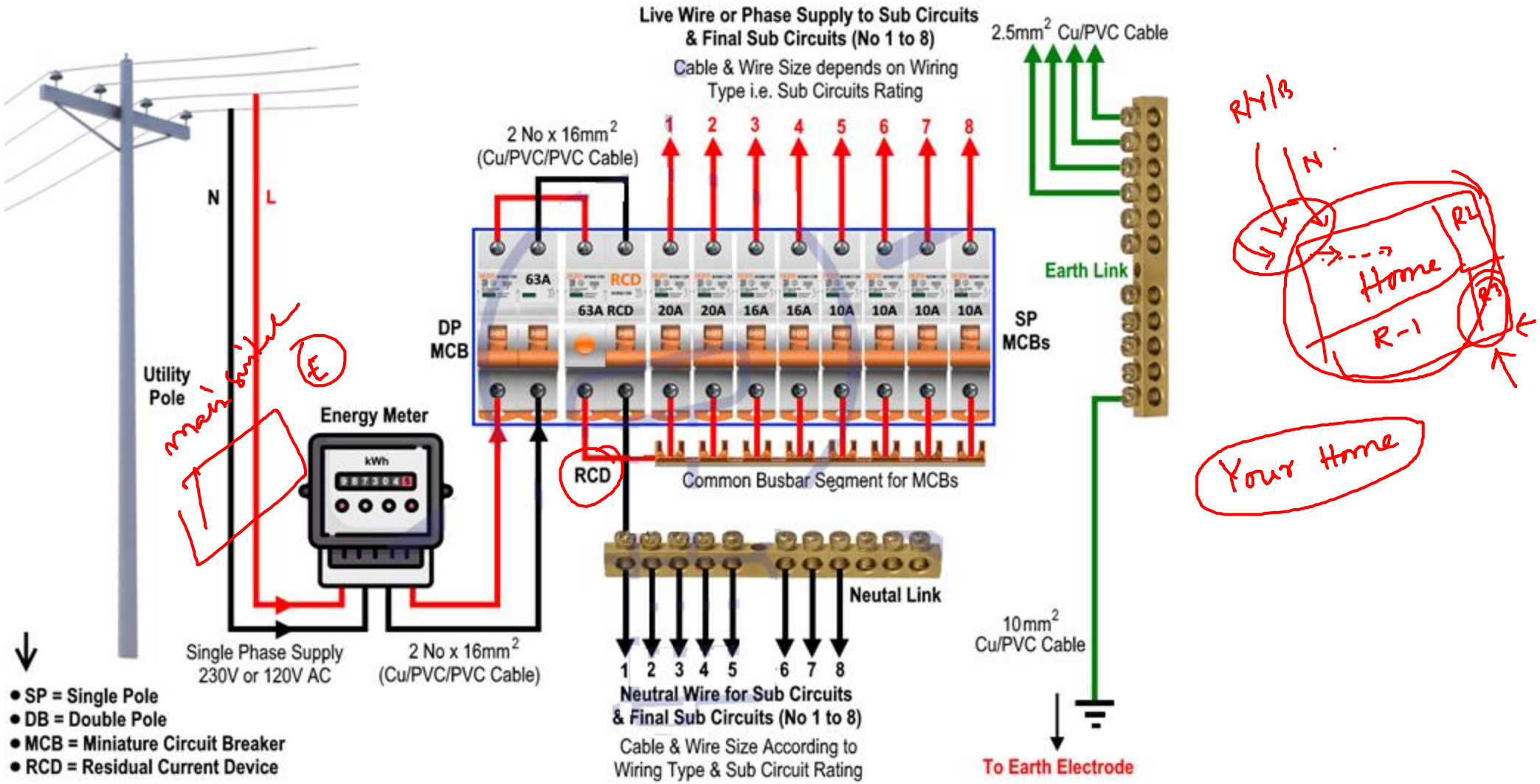








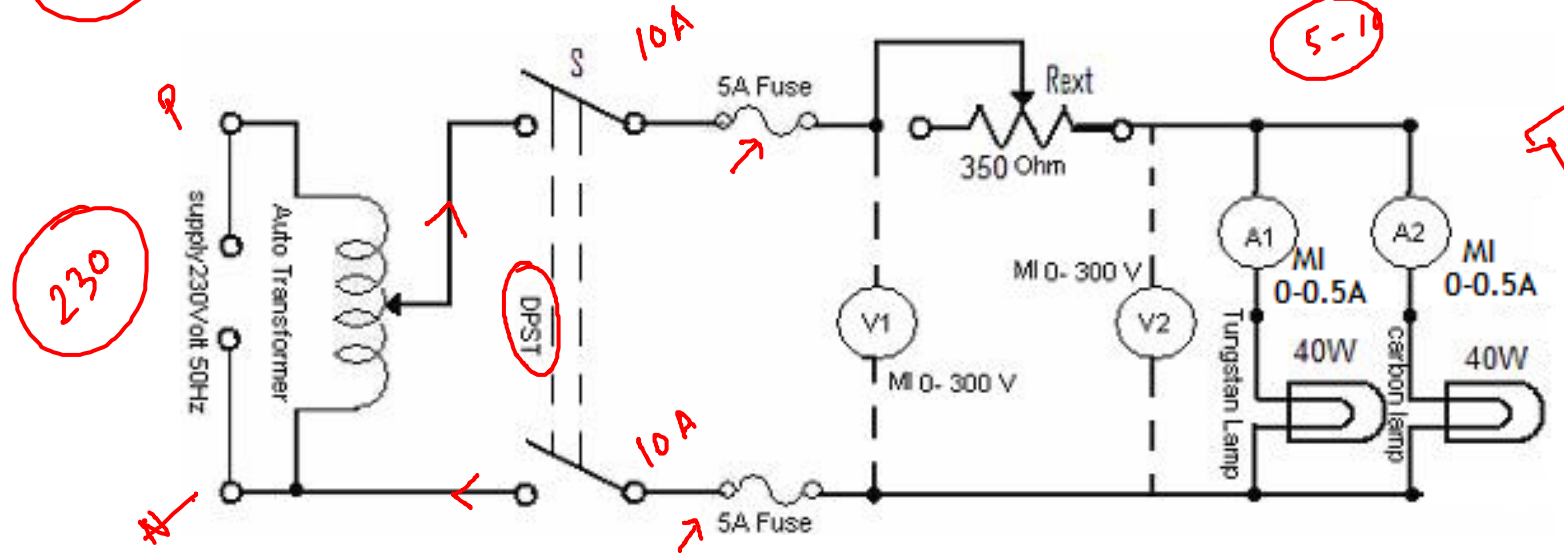
Function	*India Color Code (Old)*	*India Color Code (New)*
Single Phase Line		
Single Phase Neutral		
Single Phase Protective Ground or Earth		
Three Phase Line (L1)		
Three Phase Line (L2)		
Three Phase Line (L3)		
Three Phase Neutral (N)		
Three Phase Protective Earth or Ground (PE)		

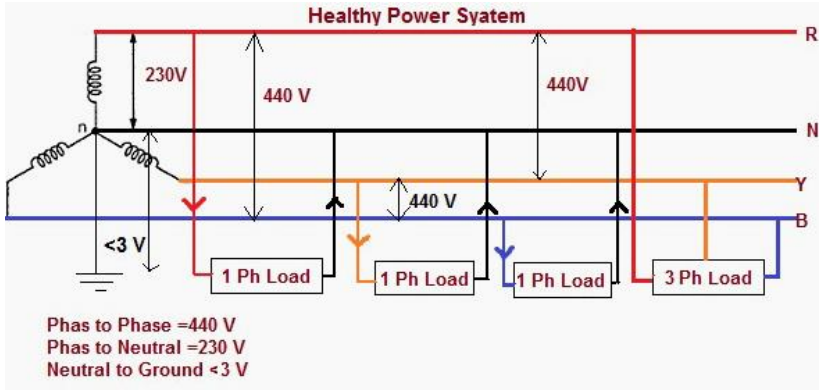


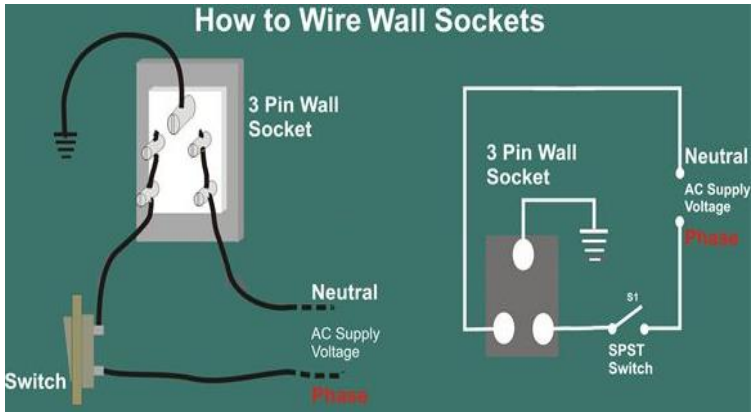
Wiring of the Distribution Board with RCD (Single Phase Supply)

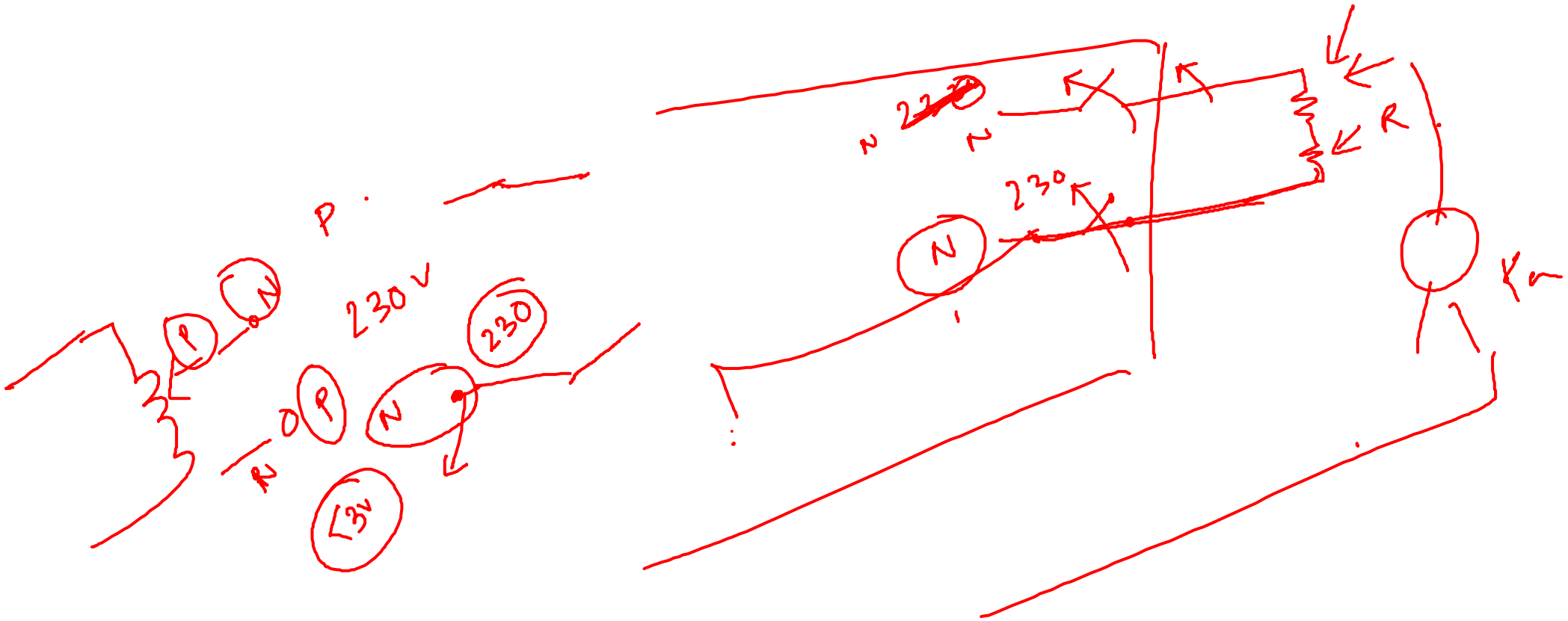
(From Utility Pole & Energy Meter to the Consumer Unit)

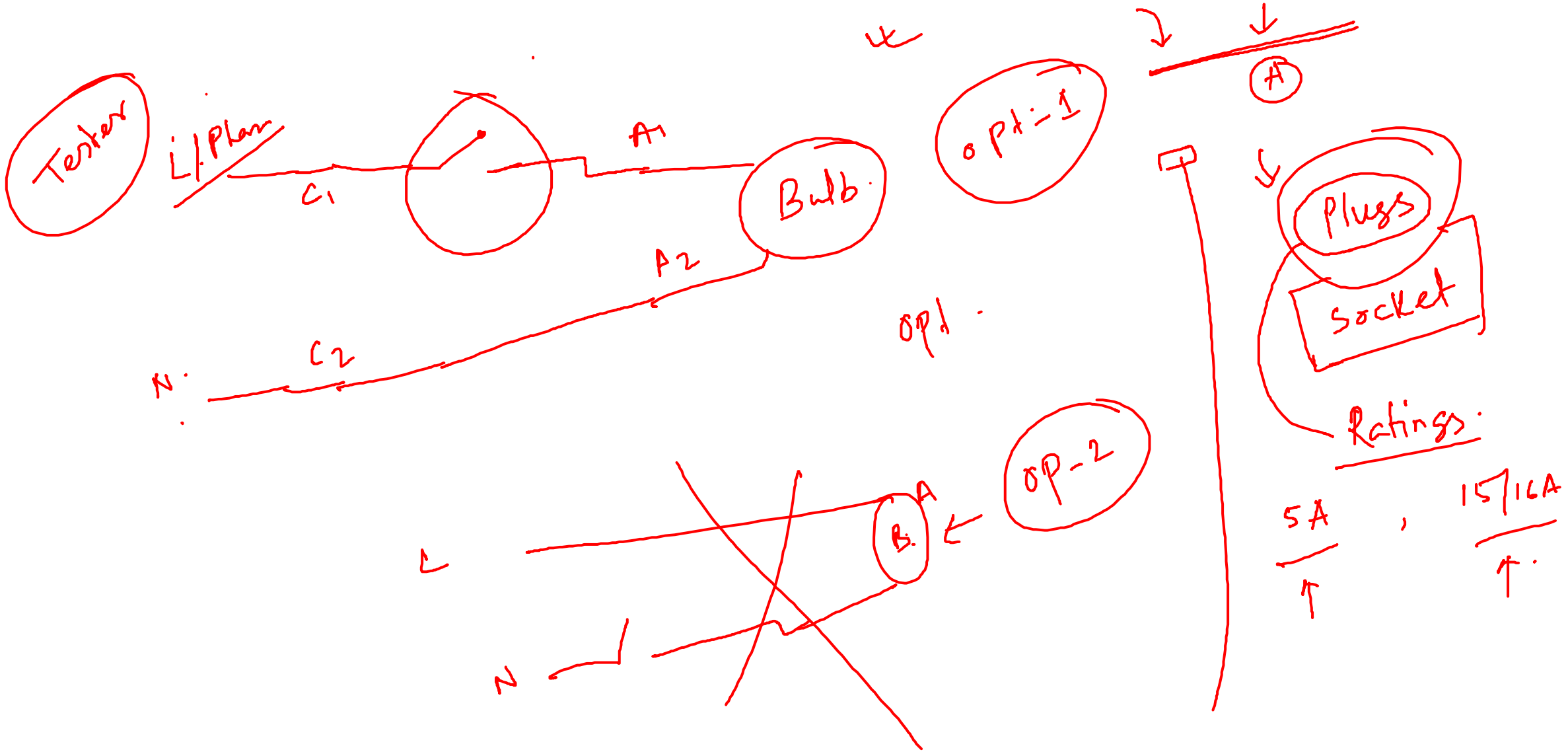
CHARACTERISTICS OF LAMPS
Expt-1 of ET lab, IIT Kgp







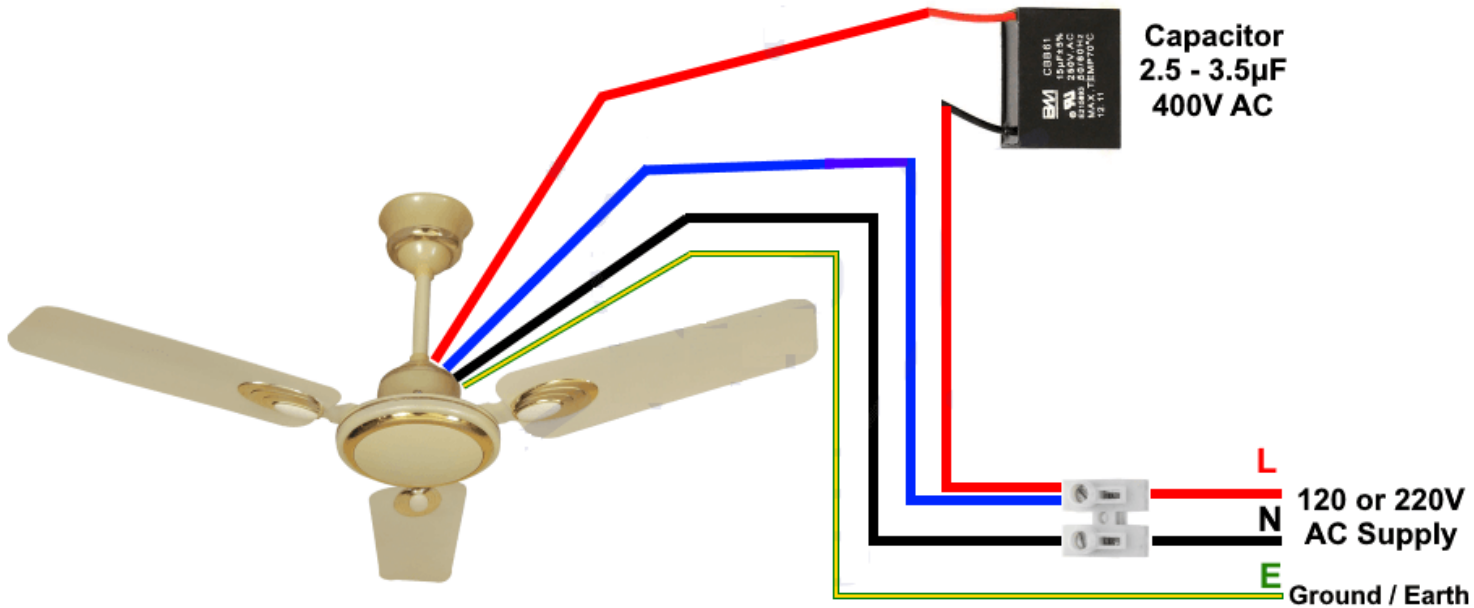

P
N
230V
P
N
230
N
L3V
N
230
N
R
Km

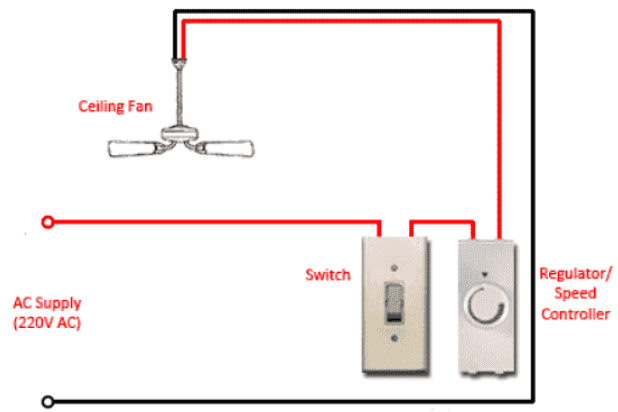

Tester
L.Plan
C1
A1
Bulb
A2
C2
N
opt:-1
opt
A
Plugs
socket
Ratings:
5A
15/16A
L
N
B.
A
op-2

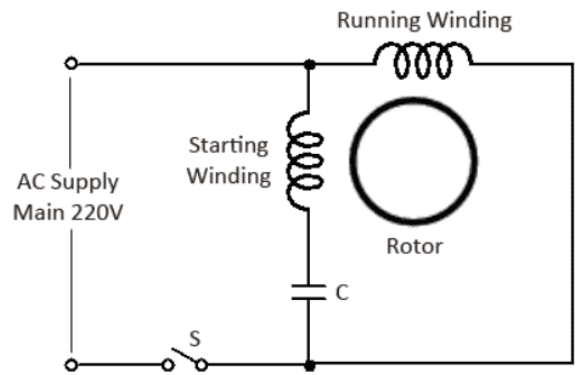
Home Appliance	Power Rating
Refrigerator	320 Watts
Electric Iron	1000 Watts
Washing Machine	500 Watts
Ceiling Fan	50 Watts
Air Conditioner	1675 Watts
Electric Geyser	1200-2000 Watts
LED Tubelight	20 Watts
LED TV	60 Watts
Exhaust Fan	24 Watts
PC/Desktop	80 Watts
Treadmill	900 Watts
Microwave Oven	1150 Watts
Kent Water Purifier	60 Watts
Clock	5 Watts
Printer	100 Watts
WiFi Router	10 Watts

NAME	RATING
LAPTOP CHARGER	INPUT-100-240V ,1.5A,50-60Hz(AC) OUTPUT-19.5V,3.2A(DC) and 65 W
MOBILE CHARGER	INPUT-100-240V ,0.3A,50-60Hz(AC) OUTPUT-5V,1.55A(DC) and 6.5W
ELECTRIC IRON	1KW,230V,50Hz(AC)
OVEN	800W,230V(AC)
INDUCTION OVEN	2KW,230V (AC)
AIR CONDITIONER	1.7KW ,230V(AC),7.9W,1 ph,50Hz
ROOM HEATER	2KW,230V (AC)
FRIDGE	150W,230V(AC)
LED TUBELIGHT	18-20W,230V(AC)
FAN	74 W,220-240V(AC),50Hz
SOCKET-1	5A,240V(AC)
SOCKET-2	25 A,240V(AC)
GEYSER	2KW,240V(AC)

How to Replace a Ceiling Fan Capacitor?







Thank You

Stay Connected Stay Charged!

For any query/clarification: drop an email to ddebnath@ee.iitkgp.ac.in