Experiment Number- 5

Title: POWER AND ENERGY MEASUREMENT.

Aim: i) To measure the Power, Energy and Power factor in a single phase AC circuit using analog meter

Apparatus required:

Sl.	Name of Equipments	Specification	Quantity
1	Variac		
2	Voltmeter (MI)		
3	Ammeter (MI)		
4	Wattmeter		
6	Choke coil		
7	Resistive load		
8	Connecting wire		

Theory

Procedure:

i) Connect the circuit as shown in figure 1
ii) Connect a resistive load
iii) Note down the readings of ammeter, voltmeter, wattmeter and energy-meter
iv) Calculate the phase difference
v) Repeat step (ii), (iii) and (iv) with with RL load.
vi) Connect the circuit a shown in figure 2
vii) Measure the voltage and current across the load using a CRO.
viii) Find the RMS values of voltage and current and note the reading in table 2
ix) Find the phase difference from time difference between the waveform of current and voltage as observed in the CRO.
x) Calculate the power as $VI\cos\theta$.

Observation

Table1: Table showing the power energy and frequency measurement in a AC circuit from analog mea

Sl. No	Voltage (V)	Current (A)	Power(W)	Frequency (Hz)	Power factor (W/VI)	Energy consumed in 5 min	Type of load

Table2 : Table showing the power energy and frequency measurement in a AC circuit from CRO

Sl. No	Voltage (V)	Current (A)	Power(W)	Frequency (Hz)	Power factor	Type of load

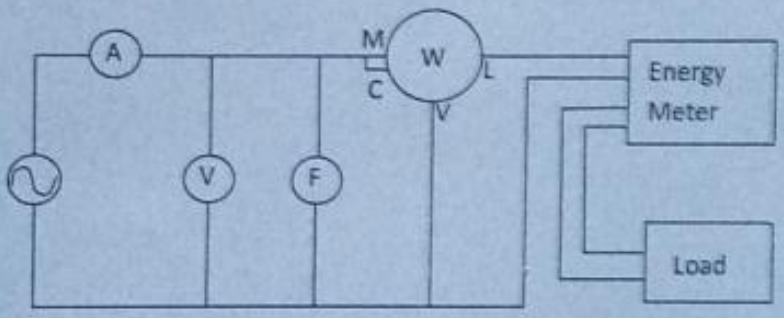

Fig 1

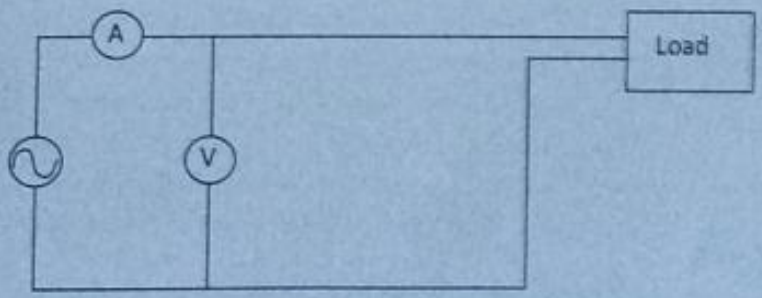

Fig 2

Calculation:-

Precaution:-

Discussion:-

Explain how power can be measured in a three phase circuit if

a) Both load and source are balanced.
b) Source is balanced but load is not balanced.
c) Load is balanced but source is not balanced.
d) Both source and load are unbalanced.