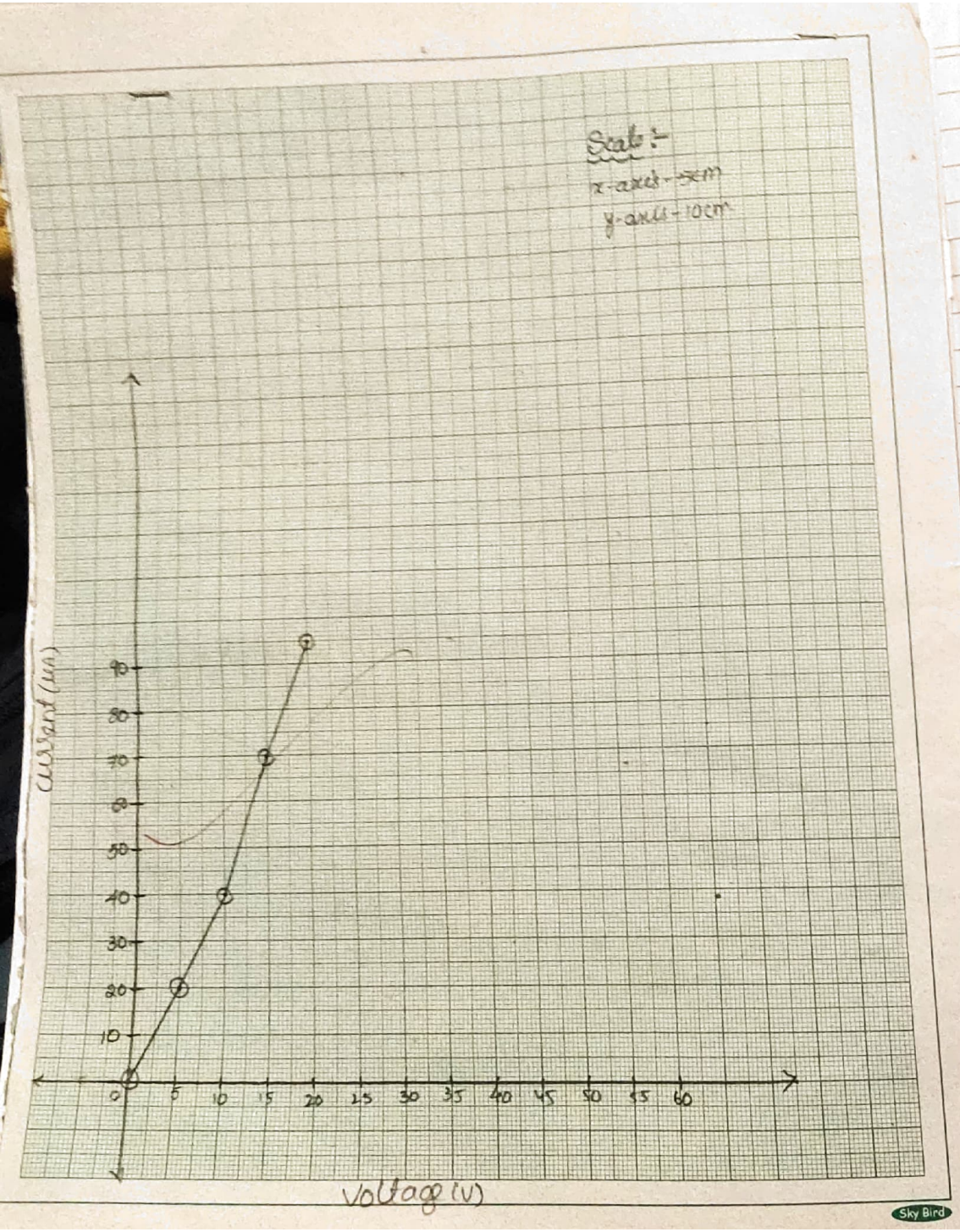


1. Verification of Ohm's law & Kirchoff's law

Aim: To verify ohm's law for a given Resistive Network

Apparatus Required:

S.No	Apparatus Name	Range	Quantity
1.	DC Regulated power supply	0-30V	1
2.	Ammeter	(0-200)mA	1
3.	Voltmeter	0-30V	1
4.	Resistor	1kΩ	1
5.	Rheostat	300Ω/2A	1
6.	Bread board & connecting wires	...	Required

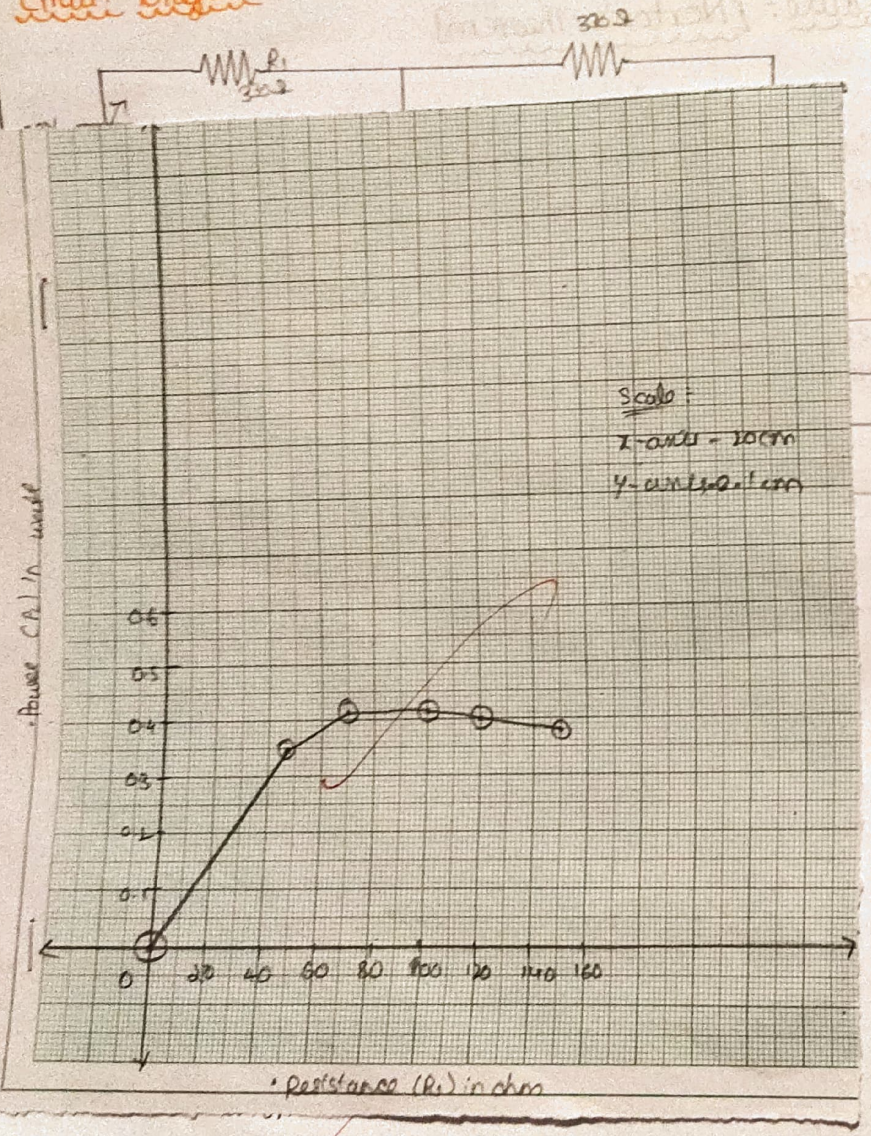
Theory: Ohm's law: Ohm's law states that the current flowing through a conductor is directly proportional to the potential difference across its ends, provided the temperature and physical conditions remains constant. $V=IR$; V = voltage; I = current; R = Resistance

Procedure:

1. Make the connections as per circuit diagram.
2. Switch on the power supply to RPS and apply a voltage and take the reading of voltmeter and Ammeter.
3. Adjust the rheostat in steps and take down the reading of Ammeter & voltmeter.
4. Plot a graph with V along x-axis and I along y-axis.
5. The graph will be a straight line which verifies ohm's law.
6. Determine the slope of the V-I graph. The required slope give resistance of the wire.

Result: Thus, the ohm's law is verified for the given circuit.

Circuit Diagram:



Max - Power (W)
0.03062

V_{th}^2

5. Verification of Max - Power Transfer Theorem and Superposition Theorem

5a. Max-Power Transfer Theorem:

Aim: To verify maximum power transfer theorem.

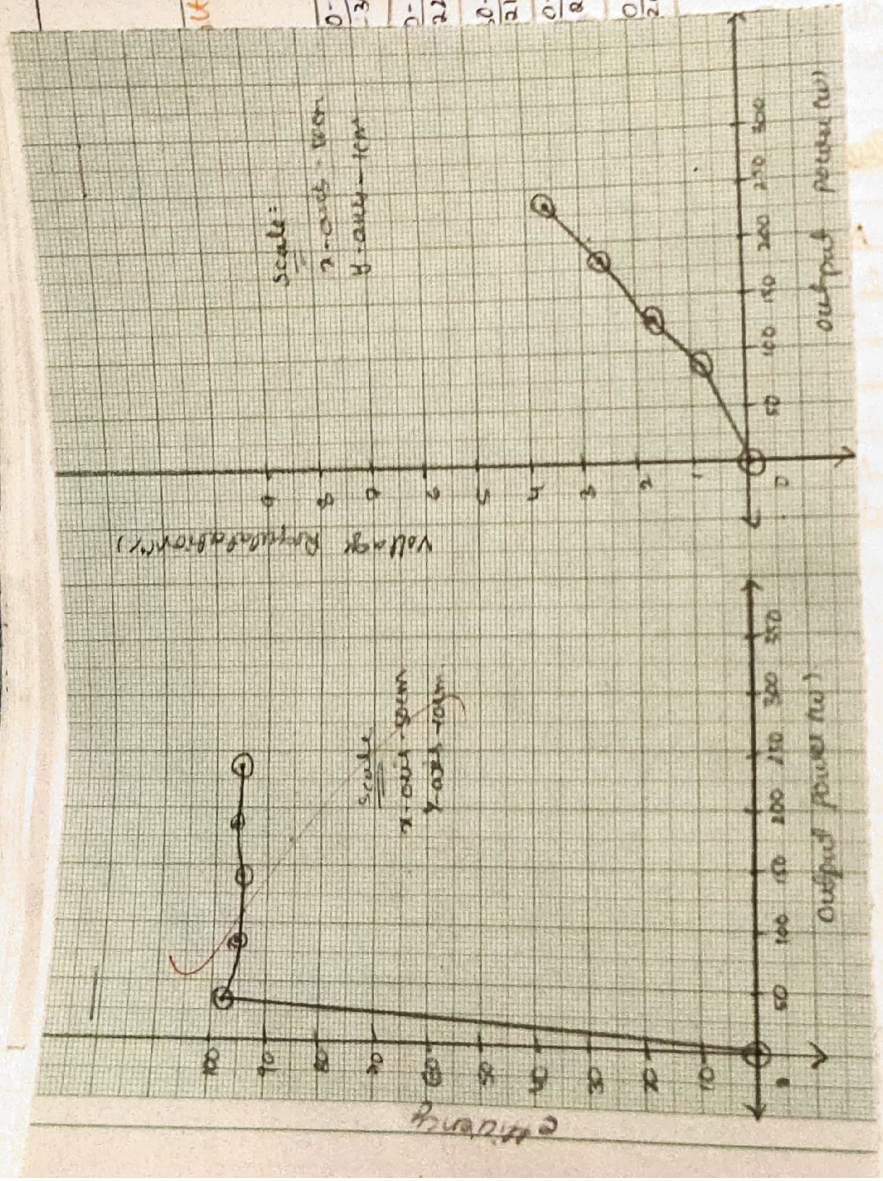
Apparatus Required:

S.No	Apparatus Name	Range	Quantity
1.	DC Regulated power supply	0-30V	1
2.	Voltmeter	0-30V	1
3.	Ammeter	0-200mA	1
4.	Resistor	330Ω, 220Ω	Each two
5.	Multimeter	-	1
6.	Bread board & connecting wires		Required

Procedure:

1. Give the connections as per circuit diagram.
2. Measure the R_{th} using a multimeter
3. Measure the V_{th} across 220Ω (R_L)
4. Measure load current (I_L) through R_L
5. Calculate the maximum power transferred to the load

(Voltage Regulation (%))
$\frac{0-230}{230} = 0$
$\frac{0-220}{220} = 45\%$
$\frac{0-216}{216} = 6.4\%$
$\frac{0-212}{212} = 5.4\%$
$\frac{0-208}{208} = 10\%$



6. Load test on single phase transformer

Aim:- To evaluate the transformer performance under full load conditions.

Apparatus Required:-

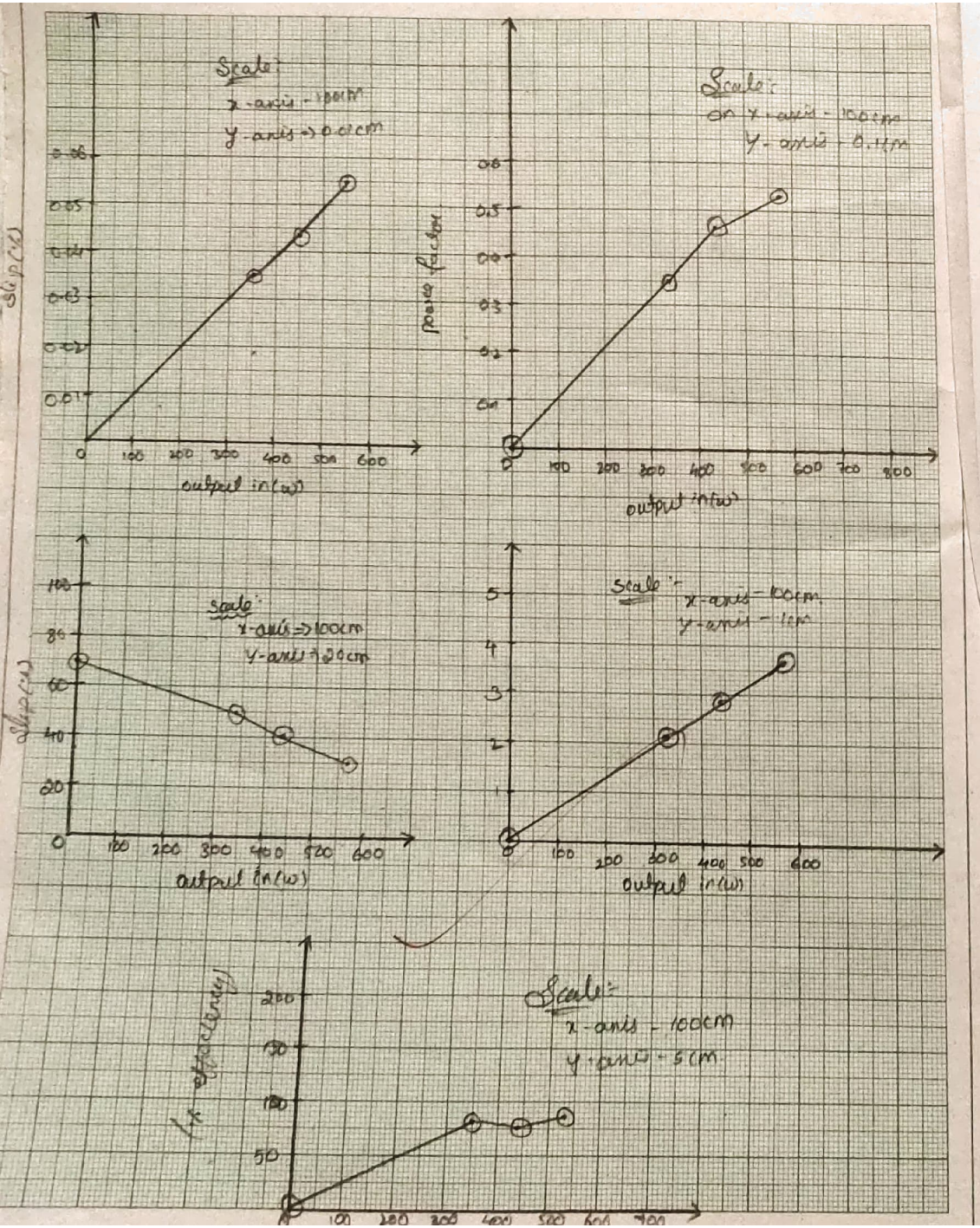
SNO	Apparatus Name	Range	Quantity
1.	Single phase transformer	1Φ	1
2.	Voltmeter	0-50 V	1
3.	Ammeter	0 - 300V	1
4.	Supply source	0-10A	1
5.	Load Bank	5KW - 230V	1
6.	Watt meter	-	1

Theory:-

A load test on a single phase transformer is used to determine its efficiency and voltage regulation under various load conditions. The test measures parameters such as power loss, output voltage and current.

Procedure:-

1. Connect the primary winding of the transformer to the AC power source.
2. Connect the secondary winding to load bank.
3. Connect the voltmeter across the secondary winding to measure the secondary voltage.



9. Load test on single phase Induction Motor

Aim: To conduct the load test on the given single phase induction motor and to plot it's performance

Apparatus Required:

SNo	Apparatus Name	Range	Quantity
1.	Voltmeter	(0-300V) MI	1
2.	Ammeter	(0-10A) MI	1
3.	wattmeter	300V, 10A	1
4.	Pacho meter	10-10000 RPM	1

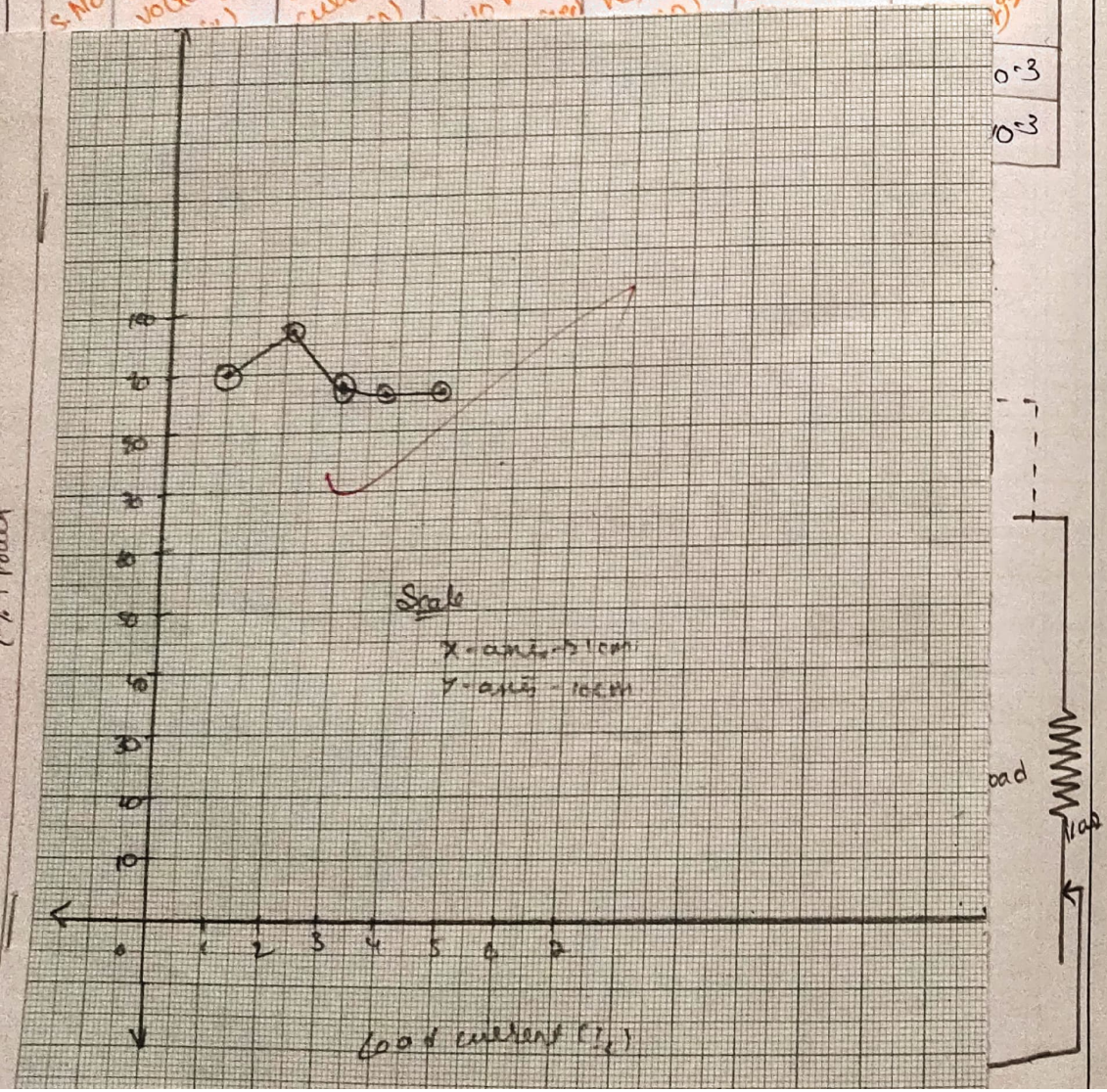
Theory:

A load test on a single phase Induction motor is performed to evaluate its performance under different load conditions.

Procedure:

1. Make connections as per diagram.
2. The DPST switch is closed and the single phase supply is given.
3. By adjusting the variance, the rated voltage is applied, no load values of speed, balance and meter readings.
4. The procedure is repeated till rated current of the machine.

S.NO	line voltage (V)	line current (A)	Time taken for 'n' revolutions (sec)	no. of revolutions (n)	Energy calculations	Measured Energy (J)



12. Calculation of Energy consumption using Energy

Aim: To calibrate and test the given single phase

Apparatus Required:

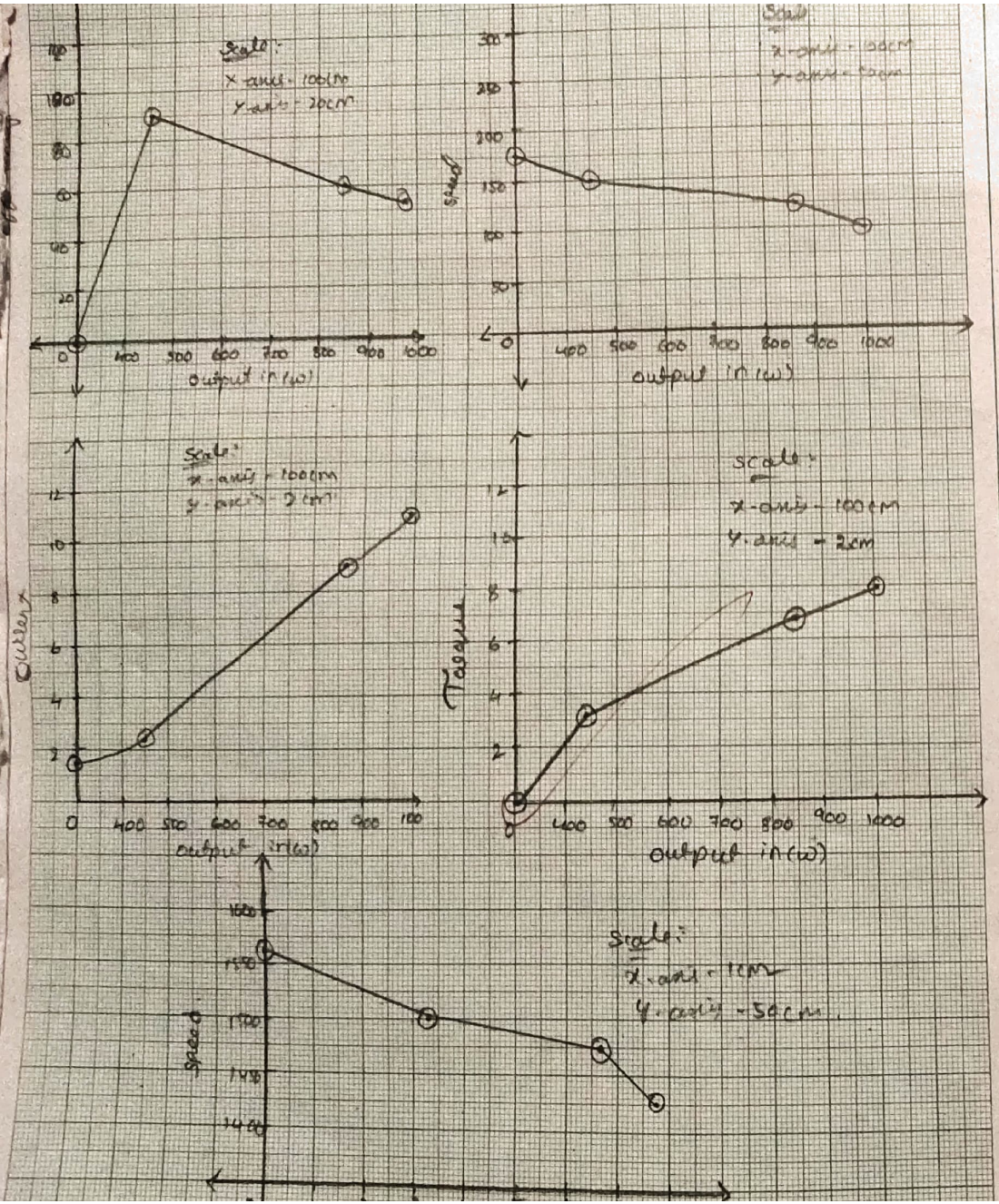
SNO	Name	Range	Quantity
1.	Single phase Energy meter	1500 REV	1
2.	Wattmeter	UPF	300V
3.	voltmeter	MI	(0-50)V
4.	Ammeter	MI	(0-5)A
5.	Single phase variac	1-Φ	230A
6.	Rheostat	WW	100Ω, 15A
7.	stopwatch	-	1

Theory:

Induction type of Energy meters are universally used measuring of energy in domestic and industrial AC Industrial type of meters posses lower pitch and higher

Procedure:

1. Connection is made as per the circuit diagram.
2. Keep the single phase variac at zero volt position.
3. Vary the voltage to rated voltage and variac to volt position.
4. Calculate the readings.



13. Output Characteristics of LVDT

Aim: To plot the output characteristics of LVDT.

Apparatus Required:

SNO	Name	Quantity
1.	LVDT KIT	1
2.	MULTIMETER	1
3.	CONNECTING WIRES	-

Theory:

The linear variable Differential transformer (LVDT) is an electromechanical Transformer used to convert linear displacement to an electrical signal.

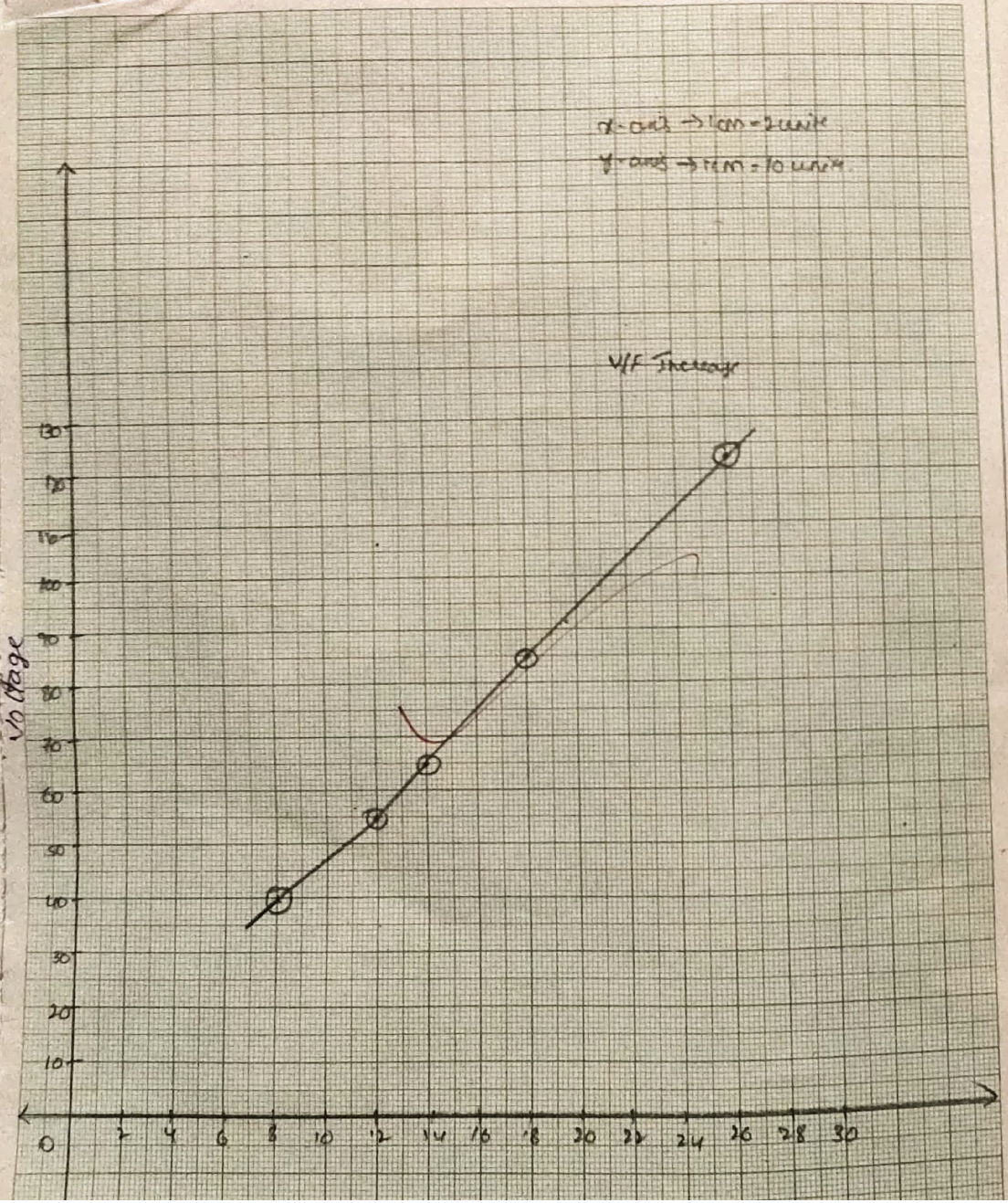
Procedure:

1. Connect as per diagram.
2. Switch on the power and make the core NULL.
3. First turn the nut in clock-wise direction, move core inwards
4. Take the readings.

Result:

Thus, the output characteristics of LVDT is noted.

Three phase Induction motor drive system.



20. THREE-PHASE INDUCTION MOTOR DRIVE SYSTEM

Aim:- To study the function of three-phase induction motor drive system in Automobiles.

Apparatus Required:-

S.No	Name	Quantity
1.	Three phase Induction Motor	1
2.	Panel with DC voltmeter, DC ammeter, AC ammeter	1
3.	Battery Emulator	1
4.	Human Machine Interface	1
5.	12V Alternator batteries for Loader	1

Procedure:-

1. Give the AC supply to meter [5]. Battery Emulator.
2. Fully rotate potentiometer of DC control.
3. Select forward mode using HMI.
4. Vary the frequency using VFD.
5. Calculate the different values given.

Caution:-

→ Don't connect overload supply.
→ Check proper connection.
→ Don't overload motor.

Result:-

Thus, functions of three phase Induction motor Drive