

Certificate

Name: Prabhallad Meher

Class: 4th sem

Roll No: L22110002007

Exam No:

Institution GOVT POLYTECHNIC BALANGIR

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Principal

Date:

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S. No.	Name of the Experiment	Page No.	Date of Experiment	Date of Submission	Remarks
01	Determine The input and output characteristics of CE and CB transistor configuration	01	1.03.2023	15.03.23	<u>Sam</u> 25/3/23
2)	Construct Half wave rectifier full wave rectifier and bridge rectifier using different filter circuit to determine ripple factor and analysis wave form with filter without filter.		15.03.2023	22.03.23	<u>Sam</u> 22/3/23
3)	Construct The and test The regulation using Zener diode.		22.03.23	29.03.23	<u>Sam</u> 29/3/23
4)	Determine Drain and transfer characteristic of JFET		29.03.23	5.4.2023	<u>Sam</u> 5/4/23

AIM OF THE EXPERIMENT

TO Study The Input and output Characteristics of common base configuration.

APPARATUS REQUIRED

Trainer Transistor kit

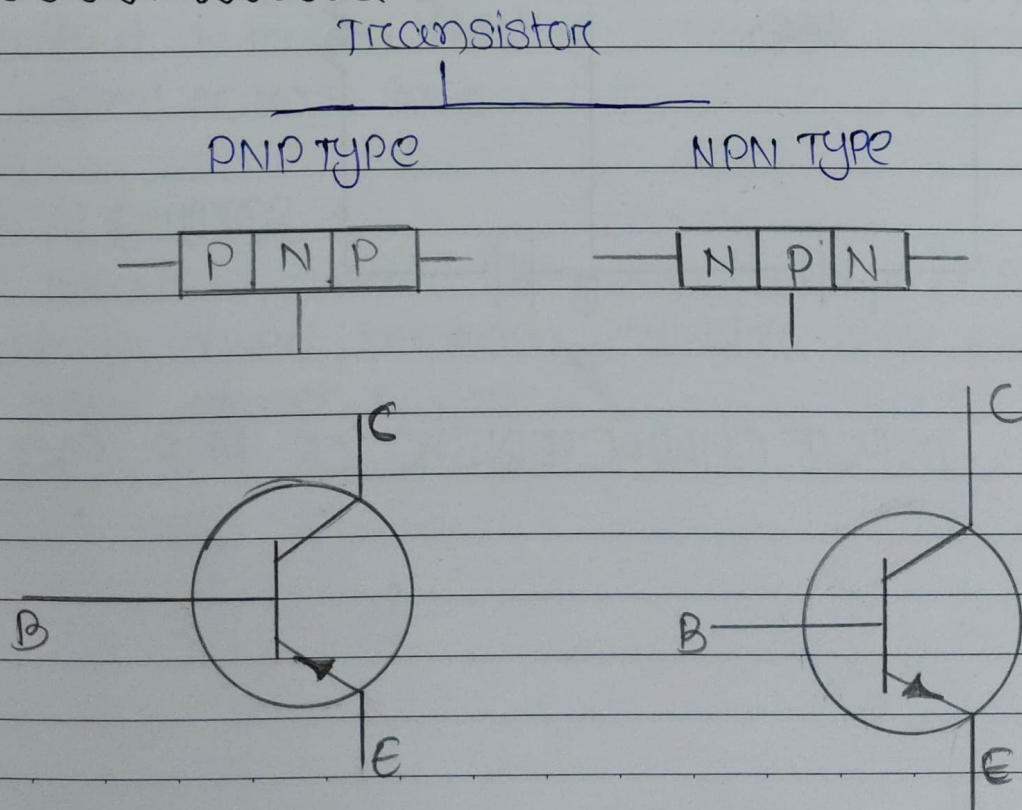
Power supply

THEORY

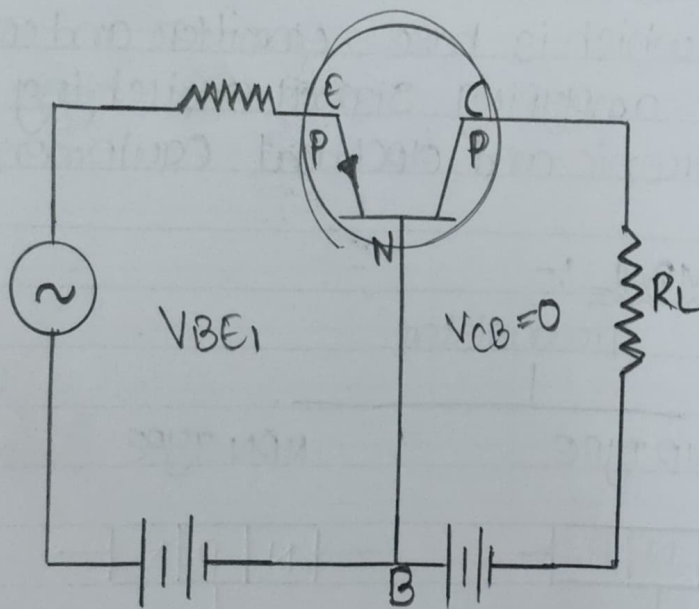
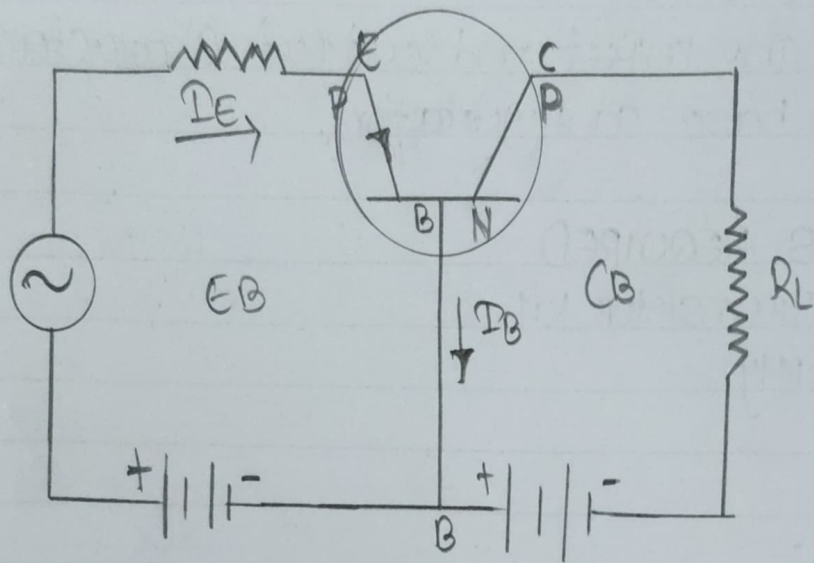
TRANSISTOR :-

Transistor is a terminal device, it has 3 layers i.e. PNP or NPN, which is base, emitter and collector. It is used for amplifying signal switching in various electronic and electrical equipment.

TRANSISTOR SYMBOL :-



Teacher's Signature _____



INPUT CHARACTERISTIC OF PNP CKT

COMMON BASE CONFIGURATION

When input is applied between emitter and base and output is taken between collector and base then it is called common base configuration.

INPUT CHARACTERISTICS

It is the graph between emitter current (I_E) and voltage drop between base and emitter junction V_{BE} . Transistor has 3 layers and they can be used in 3 configuration

- i) Common Base
- ii) Common Emitter
- iii) Common Collector

COMMON BASE:-

When input is applied between emitter and base and output is taken between collector and base. So it is called common base.

COMMON EMITTER:-

When input is applied between base and emitter and output is taken between collector and emitter then it is called common emitter.

COMMON COLLECTOR

when input is applied between base and collector and output is taken between emitter and collector then it is called common collector.

TABULATION

SL	V	$\mu A (10^{-6})$	$m A (10^{-3})$
1	2	0.3	0.1
2	4	0.4	0.1
3	5	2.4	0.4
4	6	3.2	0.8
5	7	4.4	0.9

SUBMITTED BY

NAME: Prabhakar Meher

REGD NO: L22110002007

BRANCH: Electrical Engg

SEM: 4th

GROUP: 02

Sam
15/3/23

Teacher's Signature _____

Certificate

Name: Prahalad Meher

Class: 4th sem

Roll No: L22110002007

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01	Dimensional and material study of various part of DC Machine	1 to 5	03/03/23	05/03/23	Copy 21/2/23
2)	Identifi- Study of Three point starter, connect and run a dc shunt motor & measure the no load current	6-8 -	19/03/23	24/03/23	Copy 24/2/23
3)	Study about Four point starter, Connect and run a DC Compound motor.	9-11	02/04/23	07/04/23	Copy 21/4/23
4)	Identification of different terminal of DC machine by test lamp method & multimeter method. & measure insulation resistance by megger.	12-19	10/04/23	17/04/23	Copy 19/4/23
5)	Control The speed of a DC shunt motor by field flux method & Armature voltage control method.	16-18	21/04/23	28/04/23	Copy 28/4/23

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S. No.	Name of the Experiment	Page No.	Date of Experiment	Date of Submission	Remarks
6)	Determine The efficiency of a DC machine by breaktest method.	19-22	21/04/23	26/04/23	<i>Carha</i> 26/04/23
7)	POLARITY test of single Phase transformer.	23-25	08/05/23	16/05/23	<i>Carha</i> 16/05/23
8)	parallel operation of Two Single Phase Transformer	26-28	09/05/23	15/05/23	<i>Carha</i> 15/05/23
9)	Identification of terminals determination of voltage transformation ratio of a single Phase transformer	29-31	16/05/23	23/05/23	<i>Carha</i> 23/05/23
10)	Perform oc test and sc test of a Single Phase transformer.	32-35	25/05/23	31/05/23	<i>Carha</i> 21/05/23
11)	TO Obtain the open circuit characteristics of DC Shunt motor and Find its Critical resistance.	36-37	27/05/23	01/05/23	<i>Carha</i> 11/05/23

DC MACHINE :-

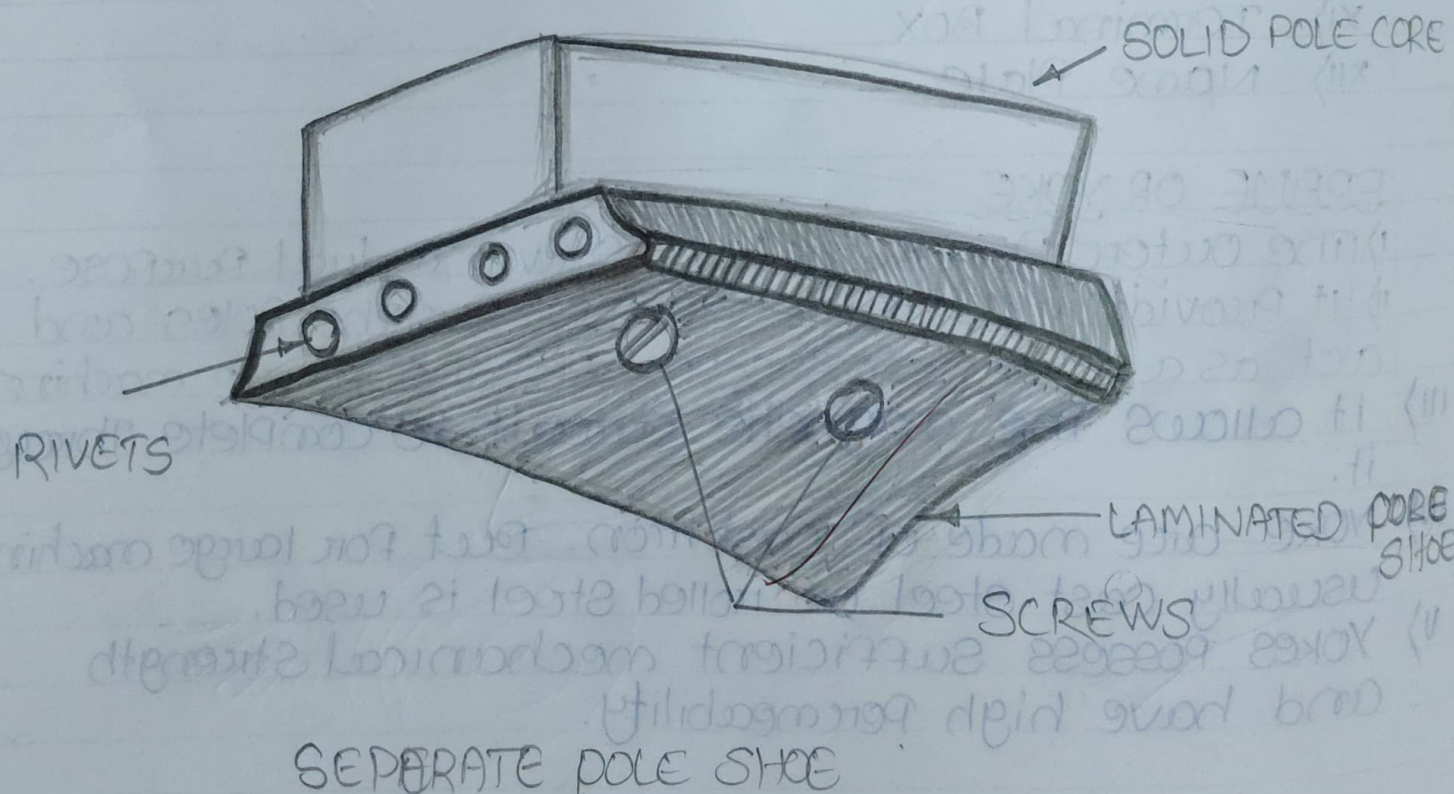
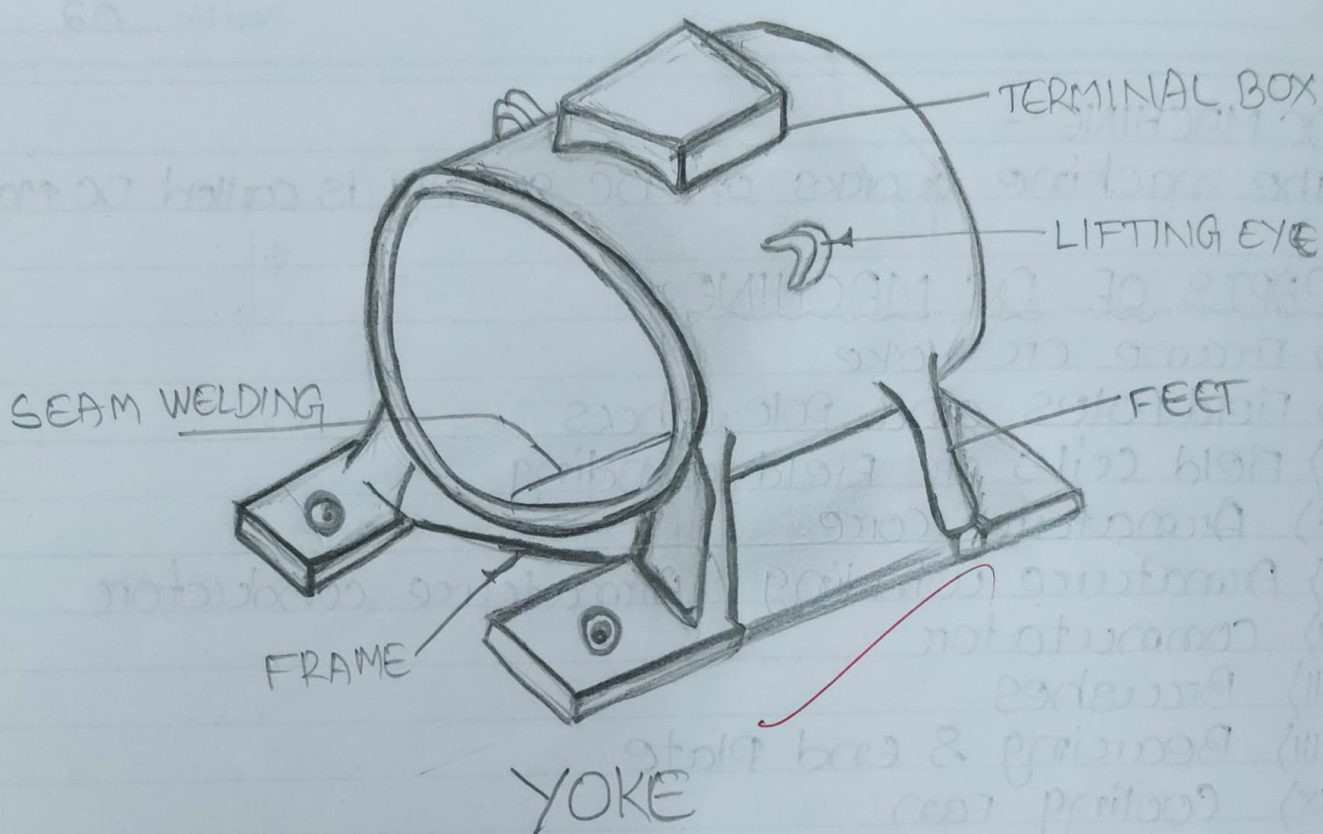
The machine works on DC supply is called DC machine

PARTS OF DC MACHINE:

- i) Frame or Yoke
- ii) Field poles and pole-shoes
- iii) Field coils or Field winding
- iv) Armature core
- v) Armature winding / Armature conductors
- vi) Commutator
- vii) Brushes
- viii) Bearing & end plate
- ix) Cooling fan
- x) Shaft
- xi) Terminal box
- xii) Name Plate

FRAME OR YOKE

- i) The outer frame or yoke serves a dual purpose.
- ii) it provide mechanical support for the poles and act as a protecting cover for the whole machine.
- iii) it allows the magnetic circuit to complete through it.
- iv) Yoke are made of cast iron. But for large machine usually cast steel or rolled steel is used.
- v) Yokes possess sufficient mechanical strength and have high permeability.



FIELD POLES AND POLE-SHOES:-

The field magnet consists of pole cores and pole shoe. The pole shoes serve two purposes.

i) They spread out the flux in the air gap uniformly and also, being of a large cross-section, reduce the reluctance of the magnetic path.

ii) They also support the field coils.

There are two main types of pole construction. The pole core it may be a solid piece made out of either cast iron or cast steel but the pole shoe is laminated and is fastened to the pole face by means of countersunk screws.

In modern design, the complete pole cores and pole shoes are built of thin lamination of anneal steel which are riveted together under hydraulic pressure.

iii) The thickness of lamination varies from 1mm to 0.25

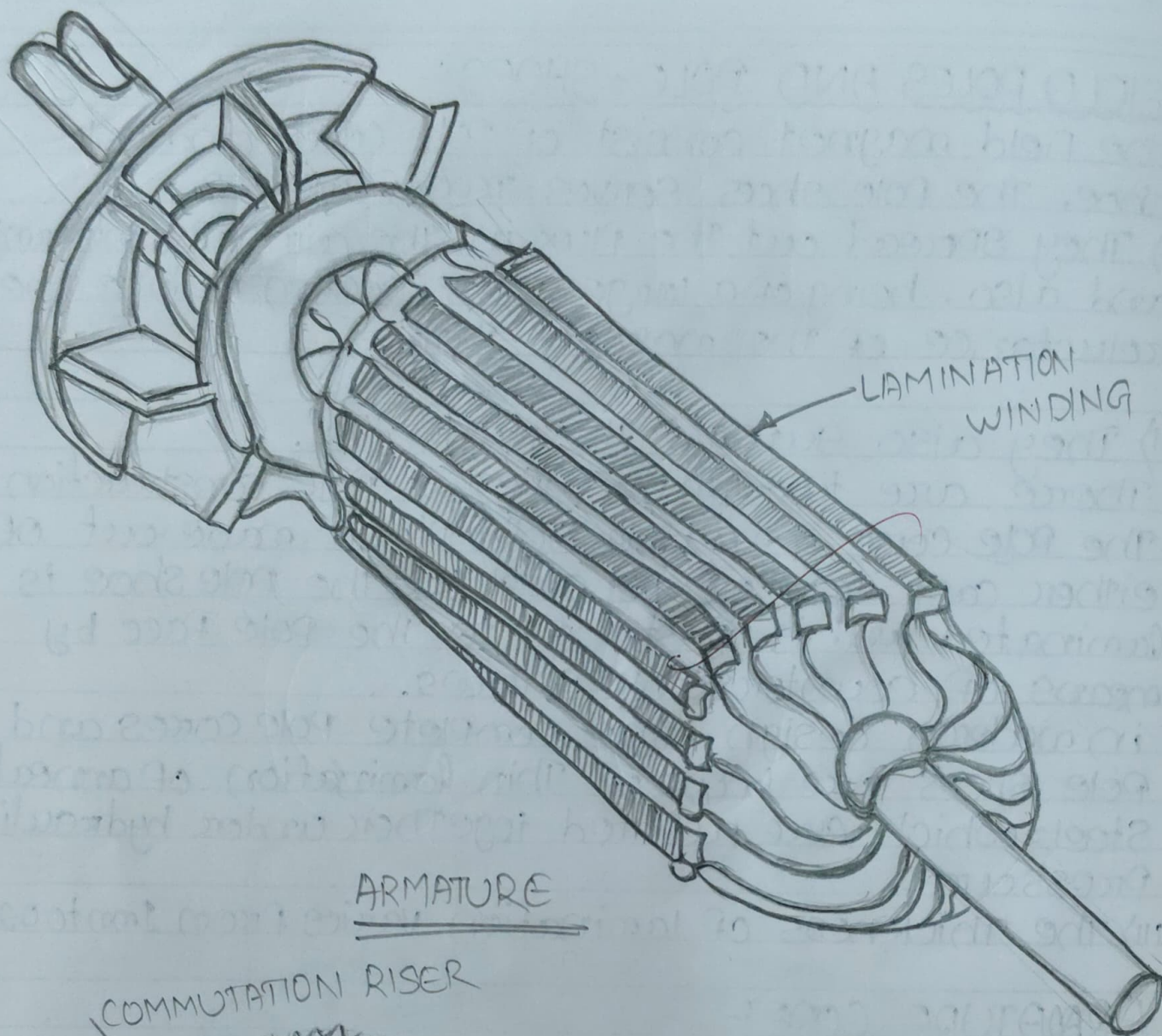
ARMATURE CORE:-

i) The armature core houses the armature conductors

ii) These conductors rotate in the magnetic field which cut the magnetic flux.

iii) The most important function is to provide a path of very low reluctance to the field flux and allowing the magnetic circuit to complete through the yoke and the poles.

iv) The armature core is cylindrical or drum shaped discs or laminations which have 0.5mm thickness.



ARMATURE

COMMUTATION RISER

INSULATED COPPER SEGMENT

END CAP

COMMUTATOR:-

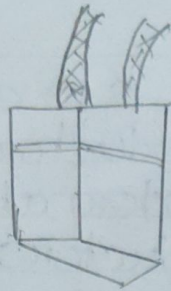
- i) The function of the commutator is to collect current from the armature conductors.
- ii) It rectifies or converts the alternating current induced in the armature conductors into unidirectional current for the external load circuit.
- iii) It is shaped like a cylindrical structure and made up of hard drawn copper.
- iv) Its segments are insulated from each other by a thin layer of mica.

BRUSH

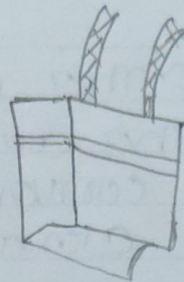
- i) The main function of a brush is to collect current from the commutator.
- ii) These are made of carbon and graphite and have the shape of a rectangular block.

BEARING AND END PLATE

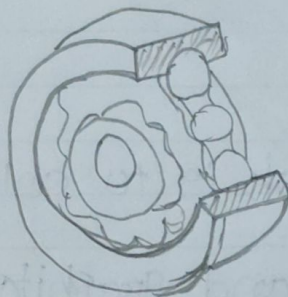
- i) A bearing is a machine element which is used to reduce friction between moving parts.
- ii) In a DC machine, ball and roller bearings are used generally, which are filled with grease or lubricating oils.
- iii) The bearings are housed in these end plates and they are fixed to the yoke.
- iv) They help the armature for frictionless rotation and to position the armature in the air gap of the field poles.



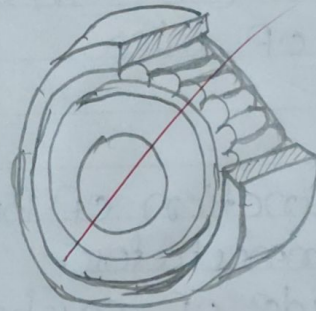
FLAT BRUSH



SHAPED BRUSH



BALL BEARING



ROLLER BEARING

COOLING FAN :-

Cooling fan are placed on the shaft of DC machine which mainly used for cooling purpose.

SHAFT

A shaft is a mechanical component for transmitting torque and rotation. It is cylindrical in shape and made of cold rolled or hot rolled steel.

TERMINAL BOX :-

Terminal box in DC machines are placed on the yoke. It is used for connection of machine winding terminal and supply terminal.

CONCLUSION :-

From this experiment we learn about the various parts of DC machine.

SUBMITTED BY

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Regd NO: L22110002007

BRANCH: Electrical Engg.

SEM: 4th

GROUP: 2.

Teacher's Signature _____

Geetha
5/3/23

JAY SHREE KRISHNA

RADHE RADHE

Certificate

Name: PRAHALLAD MEHER

Class:

Roll No: L22110002007

Exam No:

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Examiner's Signature

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1	Study & Practice of connection and reverse The direction of Three Phase induction motor	1 TO 2	7.8.2023	10.08.2023	Final 10/8/23
2	reverse direction of 3 ϕ induction motor	3 TO 4	10.08.23	14.08.23	Final 14/8/23
3	Study DOL, ΔY starter connection & running a 3 ϕ IM & measure starting Current.	5 TO 8	14.08.23	17.08.23	Final 17/8/23
4	Study Auto transformer & rotor resistance starter run a 3 ϕ IM & measure starting Current	9 TO 11	17.08.23	24.08.23	Final 24/8/23
5	OC test & SC test of Alternator and determine of regulation by synchronous Impedance method.	12 TO 14	24.08.23	01.09.23	Final 1/9/23
6	Parallel operation of two alternator & steady load sharing.	15 TO 19	01.09.23	8.09.23	Final 8/9/23

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S. No.	Name of the Experiment	Page No.	Date of Experiment	Date of Submission	Remarks
07	Study of Buchholz's Relay	20 21 22	11.09.23	18.9.23	Final 18/9/23
08	Measurement of Power of a 3ϕ Load using two watt meter method and verification of The result using one 3-wattmeter.	23 24 25	13.09.23	6.11.23	Final 6/11/23
09	Connection of 3ϕ Energy meter to a 3ϕ load.	27 28	6.11.23	9.11.23	Final 9/11/23

AIM OF THE EXPERIMENT

Study and Practice of connection and reverse the direction of Three phase Induction motor.

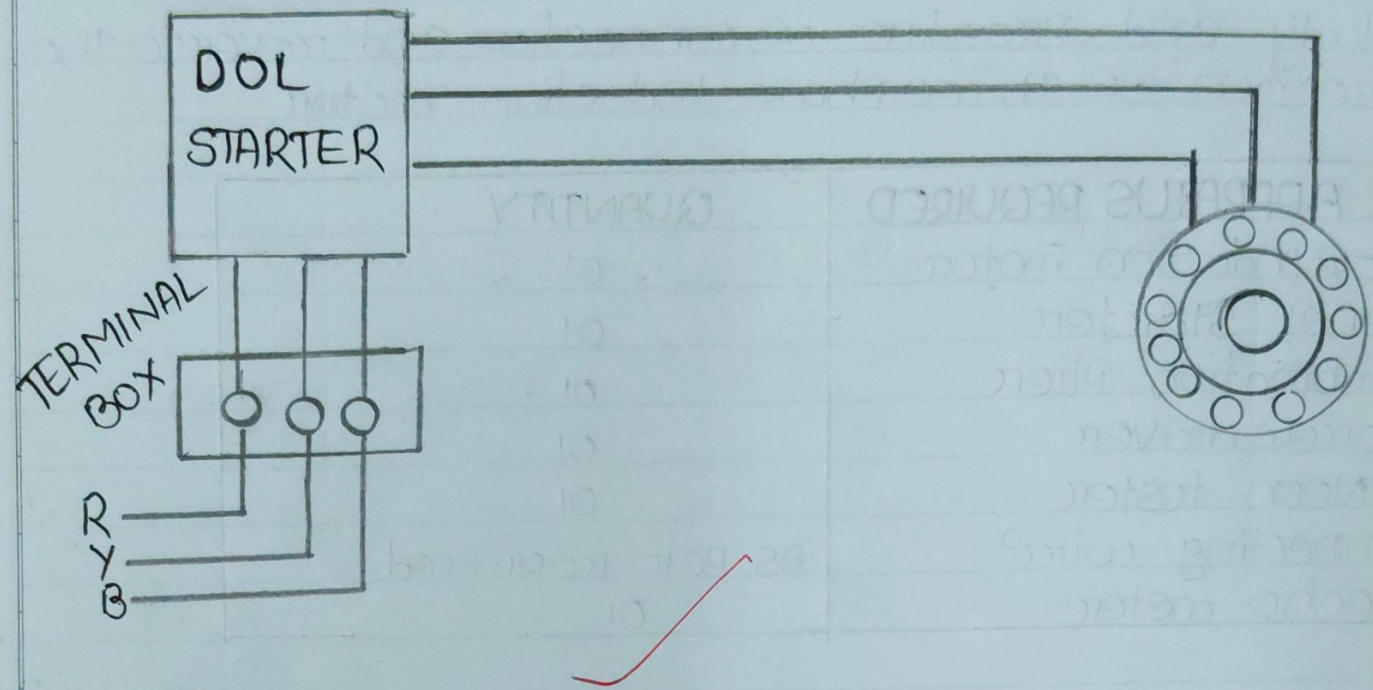
APPARATUS REQUIRED	QUANTITY
3- ϕ Induction motor	01
DOL starter	01
Combination Pliers	01
Screw driver	01
Neon tester	01
connecting wire ^o	AS per required
Techo meter	01

THEORY

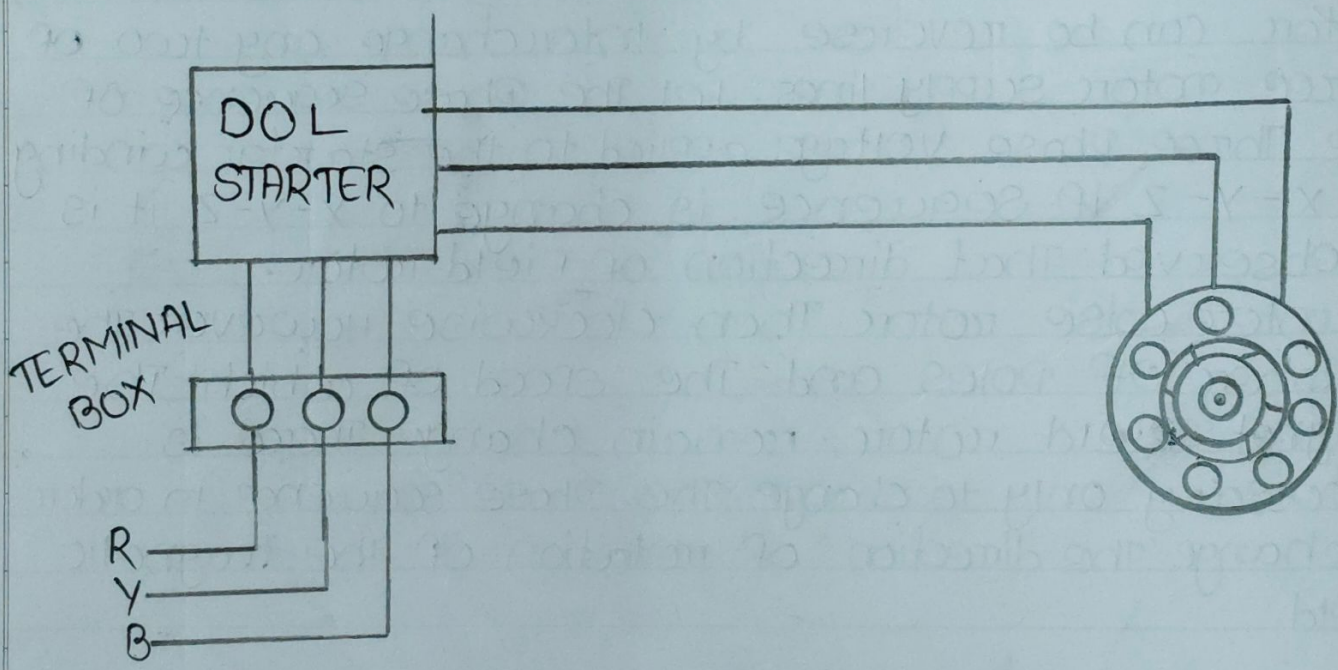
The direction of rotation of a Three Phase Induction motor can be reverse by interchange any two of Three motor supply lines. Let The Phase sequence of The Three phase voltage applied to the statutor winding is x-y-z if Sequence is change to x-z-y it is observed That direction of Field rotor.

counter wise rotor Then clockwise However The number of Poles and The speed of which The magnet field rotor remain change There is necessary only to change The Phase sequence in order to change The direction of rotation of The magnetic Field.

AIM OF THE EXPERIMENT



THEORY



PROCEDURE

- 1) First a 3ϕ induction motor to be taken to determine the reverse direction of rotation.
- 2) The induction motor is to be connected as per the circuit diagram.
- 3) After the connection the induction motor runs in clockwise direction.
- 4) Then the two phases of the supply are interchanged and supplied to 3ϕ induction terminals of the motor.

SAFETY & PRECAUTION

- 1) Always keep safety shoes and hand gloves.
- 2) Do not touch any bare conductor in bare hand.
- 3) Connection should be right and tight.

CONCLUSION

From the above experiment, know about the reverse direction of 3ϕ induction motor.

Submitted by :-

NAME: Prachalad Meher

BRANCH: Electrical / 5th sem

GROUP: 02

REGD NO: L22110002007

Teacher's Signature _____

Prachalad
10/8/23

Certificate

Name: Prahalad Meher

Class: 3rd sem
Electrical

Roll No:

Exam No: Engineering

Institution GOVT POLYTECHNIC BALANGIR

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Principal

Date:

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01	Verification of Ohm's law	1-2	14-10-22	21-10-22	Marked
02	Verification of KVL, KCL	3-9	01-11-22	11-11-22	Marked
03	Verification of Thevenin law	10-13	21-10-22	1-11-22	Marked
04	Verification of Norton's law	14-17	11-11-22	22-11-22	Marked
05	Verification of Superposition	18-24	2-12-22	9-12-22	Marked
06	Verification of maximum	25-27	9-12-22	3-1-23	Marked
07	Power transfer theorem				
07	Determine The resonance Frequency of series RLC Circuit	28-33	22-11-22	2-12-22	Marked
08	Determine The resonance Frequency of Parallel RLC circuit	36-41	13.01.23	20.01.23	Marked
09	Simulate The Superposition Theorem with The help of Matlab	34-35	03.01.23	20.01.23	Marked
10	Simulate The Series Resonance Frequency by The help of Matlab	42-43	08.01.23	20.01.23	Marked

AIM OF THE EXPERIMENT

Verification of ohm's law.

APPARATUS REQUIRED

Network theorem trainer kit.

THEORY

Ohm's Law

The current flowing through a conductor is directly proportional to the potential difference maintained across its ends, provided the temperature and other physical condition kept constant.

$$\text{i.e. } V \propto I$$

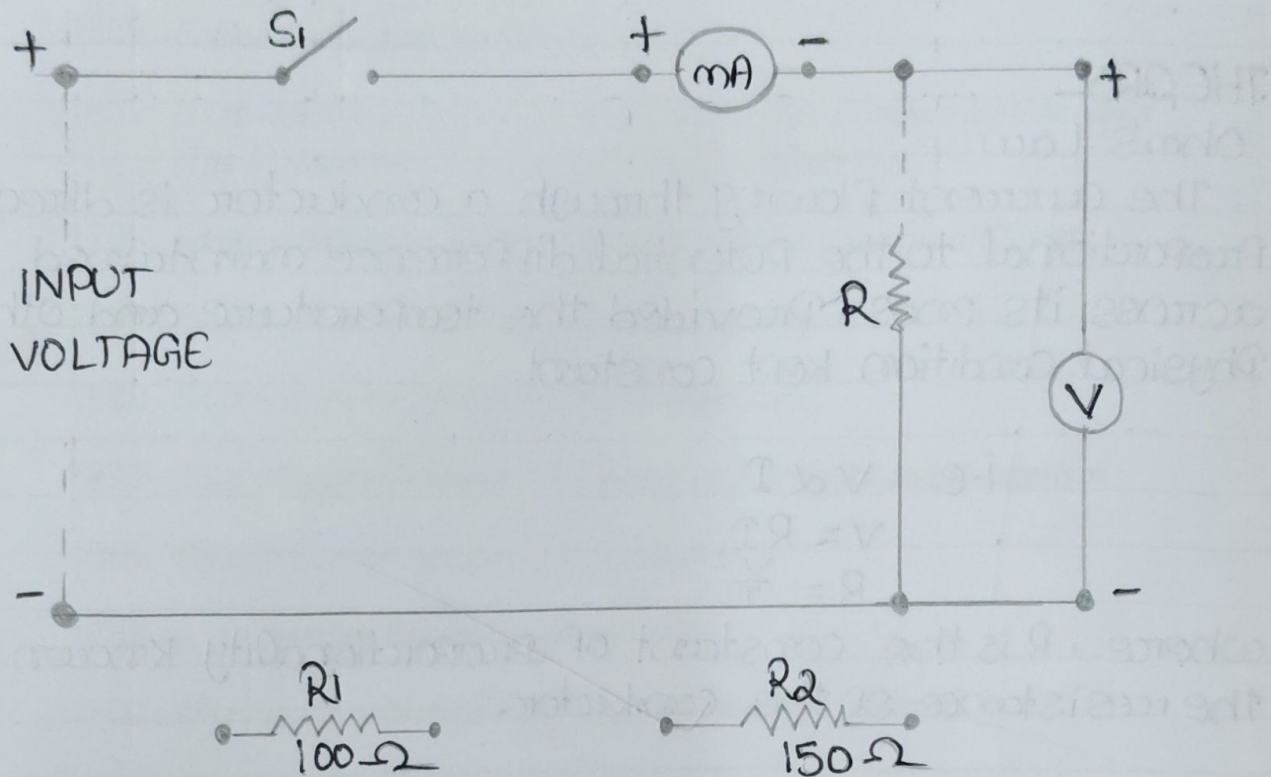
$$V = RI$$

$$R = \frac{V}{I}$$

where, R is the constant of proportionality known as the resistance of the conductor.

PROCEDURE:-

1. Connect the circuit as shown figure.
2. Connect resistance one by one in the circuit.
3. Keep switch S_1 in "OFF" position using ON-OFF toggle switch.
4. Switch ON the instrument using power "ON" switch provided on the front panel.
5. Switch "ON" the power supply using S_1 switch & note down output at voltmeter & current meter.
6. Calculate the voltage of resistance R for different values of voltage and current using formula. $R = \frac{V}{I}$



7. Plot a graph between V & I
 8. Repeat the above steps for other values of resistance.

OBSERVATION:

SL NO	voltage (V) (in volt)	Resistance (R) (in ohm)	Current (I) (in mA)	I in (A) $\frac{0.003.8}{1000}$
1	0	150	0	
2	0.6	150	3.8	0.0038
3	1	150	6.34	0.00634
4	1.51	150	9.58	0.00958
5	2.03	150	12.8	0.0128

SL NO	voltage (V) (in volt)	Resistance (R) (in ohm)	Current (I) (in mA)	I in (A)
1	0	100	0	
2	0.52	100	7.03	0.00703
3	1.02	100	12.04	0.01224
4	1.79	100	45.00	0.045
5	2.12	100	52.6	0.0526

CONCLUSION:-

From the above experiment we can verify ohm's law.

M. K. Puri

Submitted by:-
 Name: Prachalad Meher
 Regd NO:
 Branch: Electrical
 Group: 3rd sem (II)

Teacher's Signature _____

Certificate

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Class:

Roll No: L22110002007

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2	TO STUDY OF VI CHARACTERISTICS OF DIAC	7 TO 10	25/08/23	25/08/23	<u>\$ Patel</u> 25/8/23
3	TO STUDY OF VI CHARACTERISTICS OF TRIAC	11 TO 15	25/08/23	01/09/23	<u>\$ Patel</u> 01.09.23
4	TO STUDY OF VI CHARACTERISTICS OF UJT	16 TO 21	01/09/23	08/09/23	<u>\$ Patel</u> 08.09.23
5)	STUDY OF DRIVE CIRCUIT FOR SCR AND TRIAC USING DIAC	22 TO 26	08/09/23	15/09/23	<u>\$ Patel</u> 15.09.23
6)	STUDY OF DRIVE CIRCUIT SCR AND TRIAC USING UJT	27 TO 29	15/10/23	13/10/23	<u>\$ Patel</u> 13.10.23
7)	TO Study the single phase half wave and full wave controlled rectifier using R-Load	30 TO 35	13.10.23	3.11.23	<u>\$ Patel</u> 3.11.23

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AIM OF THE EXPERIMENT

TO Study The V-I Characteristics OF SCR.

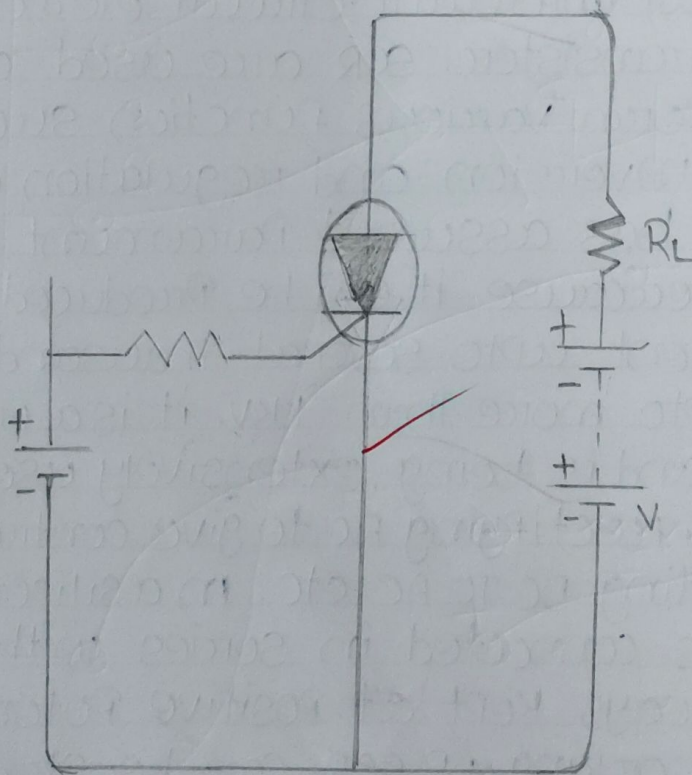
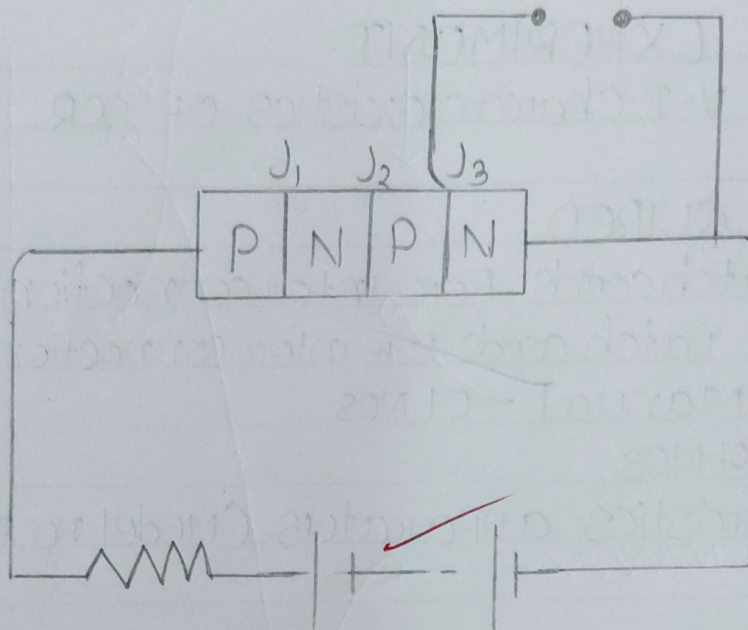
APPARATUS REQUIRED

- 01 single Point Patchcords For interconnection (4mm) - 7 NOS
- 02 Double Point Patch cords For inter connection (4mm) - 3 NOS
- 03 Instruction Manual - 01 NOS
- 04 Powercord - 01 NOS
- 05 SCR CHARACTERISTICS apparatus (Model no AL 534D)

THEORY

The Silicon controlled Rectifier (SCR) is a Three terminal semiconductor switching device which is probably the most important circuit element after diode and the transistor. SCR are used as a control switch to perform various function such as rectification, inversion and regulation of power flow. The SCR has assumed paramount importance in electronics because it can be produced in versions to handle current upto several thousand amperes and voltage upto more than 1KV. It is a unidirectional power switch and is being extensively used in switching DC and AC, rectifying AC to give controlled DC output, converting DC to AC etc. In a silicon controlled rectifier load is connected in series with anode. The anode is always kept at positive potential w.r.t cathode. The working of SCR can be studied under the following two steps

NO VOLTAGE

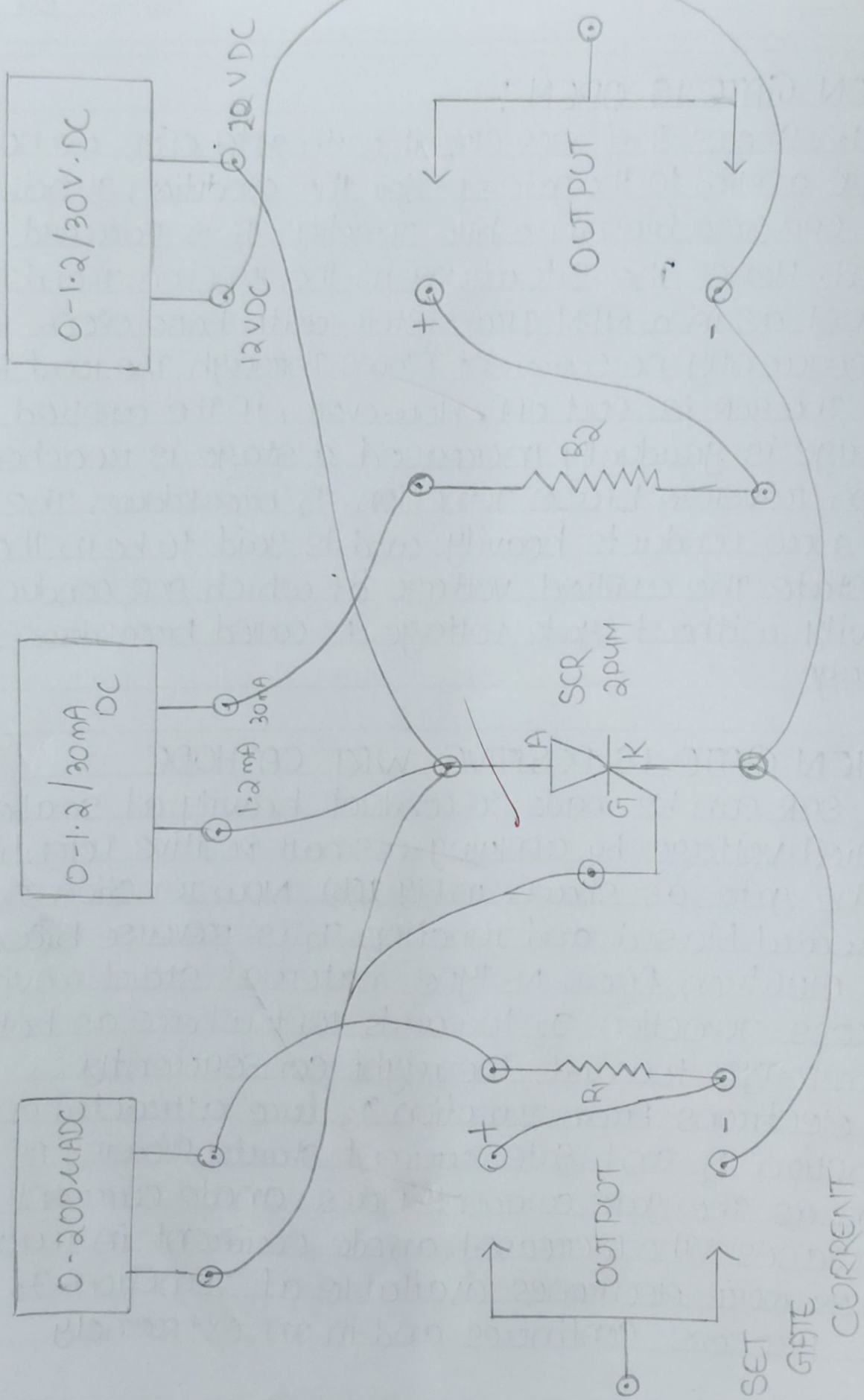


1 WHEN GATE IS OPEN :-

Fig 1(a) Shows That SCR Circuit with gate open i.e no voltage applied to The gate. Under the condition Junction J_2 is (Reverse biased) while Junction J_1 is Forward biased. Hence The situations in The Junction J_1 and J_3 is Just as in a NPN Transistor with base open. Consequently no current flows Through The load R_L and The SCR is cut off. However, if The applied voltage is gradually increased a stage is reached when reverse biased Junction J_2 breakdown The SCR now conducts heavily and is said to be in The ON state The applied voltage at which SCR conduct heavily without gate voltage. is called breakdown voltage.

2 WHEN GATE IS POSITIVE WRT CATHODE

The SCR can be made to conduct heavily at smaller applied voltage by applying a small positive potential to The gate as shown in Fig 1(b). Now Junction J_3 is Forward biased and Junction J_2 is reverse biased The electron from N-Type material start moving across Junction J_3 towards left whereas holes from P-Type towards The right consequently, The electrons from Junction J_3 are attracted across Junction J_2 and gate current starts flowing As soon as The gate current flows, anode current increases. The increased anode current in turns makes more electrons available at Junction J_2 . This process continues and in an extremely



CIRCUIT DIAGRAM OF SCR

Small time, Junction T_2 breakdown and The SCR starts conductivity heavily. Once SCR starts conducting The gate loses all controls. Even if Gate voltage is removed, The anode current does not decrease at all. The only way to stop conduction (i.e. being SCR in off condition) is to reduce The applied voltage to zero.

PEAK REVERSE VOLTAGE:-

It is The minimum reverse voltage (Cathode positive w.r.t. anode) That can be applied to an SCR without conducting in The reverse direction.

BREAK OVER VOLTAGE

It is The minimum forward voltage, gate being open at which SCR starts conducting heavily i.e. turned ON.

HOLDING CURRENT:-

It is The maximum anode current, gate being open at which SCR is ~~turned~~ off from ON conditions.

PROCEDURE

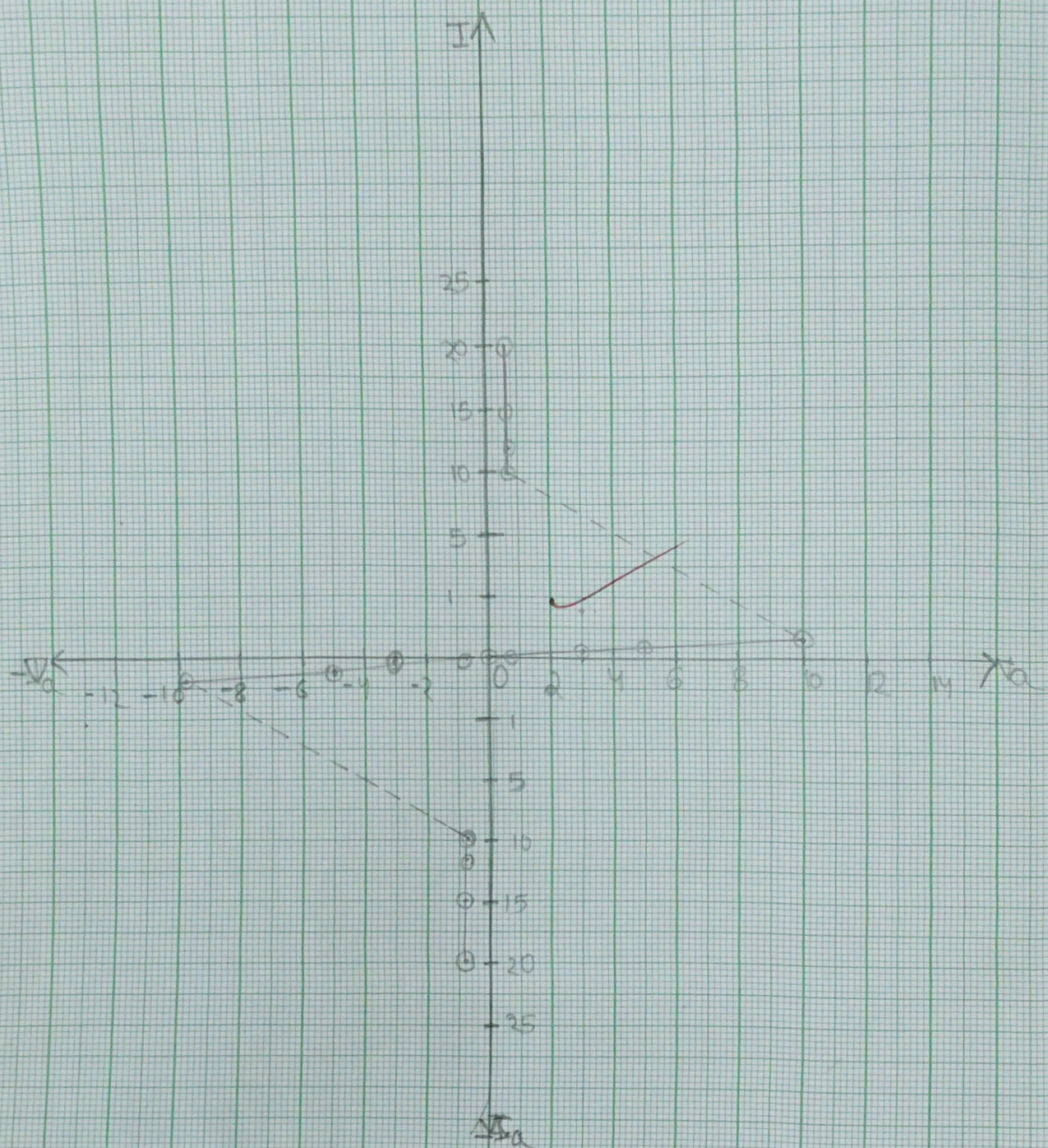
FORWARD CHARACTERISTICS

A. WITH OPEN GATE:-

1. Connect The circuit as shown in fig (2) Through Patch cords.

VI CHARACTERISTICS OF SCR

m x axis 10SD = 2 unit
m y axis 10SD = 5 unit



- 2 Keep gate power supply control knob (set Gate current) to minimum position so that gate current becomes zero.
- 3 Select milliammeter range to 1.2 mA and voltmeter range to 30V.
- 4 Switch ON The instrument using ON/OFF toggle switch provided on The front panel.
- 5 Increase Anode (A-K) cathode supply V_{AK} in small steps and note down corresponding Anode current I_A . As I_A is small SCR is in 'OFF' state.

B WHEN GATE IS POSITIVE W:R.T CATHODE

- 6 connect The circuit as shown in Fig (2)
- 7 Repeat step (2) and (4) as given in case of open gate circuit.
- 8 Select milliammeter of range to 30 mA
- 9 Increase Gate current (I_g) in small steps at a particular of I_g SCR will turn ON resulting sudden increase in anode current I_A . with decrease in Anode-cathode voltage (V_{AK})
- 10 Change The range of volt meter to 1.2 volt after triggering of SCR record all possible value of I_A (say between 10 mA to 30 mA) and corresponding V_{AK} (may The range of 0.8V TO 1V).
- 11 Also note down The gate current (I_g) required for triggering The SCR at a given V_{AK} .
- 12) Repeat the experiment for different Anode-cathode voltage (V_{AK})

13 Plot a graph between V_{AK} & I_A by taking V_{AK} along x-axis and I_A along y-axis

TABULATION - I

SL NO	ANODE VOLTAGE (V_A) (in volt)	ANODE CURRENT (I_A) (in mA)
1	0	0
2	3	0.08
3	5	0.14
4	10	0.3
5	0.7	10
6	0.7	12
7	0.7	15
8	0.7	20

TABULATION - II

SL NO	ANODE VOLTAGE (V_a) in VOLT	ANODE CURRENT (I_a) in mA
1	0	0
2	-3	-0.08
3	-5	-0.14
4	-10	-0.3
5	-0.7	10
6	-0.7	12
7	-0.7	15
8	-0.7	20

CONCLUSION

From The above experiment we measured The anode current ~~and~~ voltage, Then we Plotted graph between them. This is called The V-I characteristics

Spated
18.08.23

Submitted by:-

Name: Pritahallad Meher

Regd NO: L22110002007

Semester: 5th

Branch: Electrical Engg

Group: 11

Teacher's Signature _____

Certificate

Name: PRAHALLAD MEHER

Class: 5th sem

Roll No: L22110002007

Exam No:

Institution GOVT POLYTECHNIC BALANGIR

This is certified to be the bonafide work of the student in the
DE 8 MP Laboratory during the academic
year 20 / 20 .

No. of practicals certified _____ out of _____ in the
subject of DE 8 MP

.....
Teacher In-charge

.....
Examiner's Signature

.....
Principal

Date:

Institution Rubber Stamp

(N.B: The candidate is expected to retain his/her journal till he/she passes in the subject.)

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S. No.	Name of the Experiment	Page No.	Date of Experiment	Date of Submission	Remarks
1)	TO Study and verify the truth table of logic gates.	1 TO 3	12.8.23	26-08.23	M. K. P. 26-8-23
2)	Realization of Logic Function with the help of universal gates - NAND Gate	4 TO 7	9.9.23	16.9.23	M. K. P. 16-9-23
3)	Realization of Logic Function with the help of universal gate NOR Gate	8 TO 11	16-9-23	30-9-23	M. K. P. 30-9-23
4)	Hexadecimal addition of 2 numbers using 8085 Micro Processor	12 TO 13	30-9-23	7-10-23	M. K. P. 7-10-23
5)	The decimal of two decimal numbers. The result should not be greater than 199.	14 TO 15	14-10-23	4-11-23	M. K. P. 4-11-23

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[illegible]

AIM OF THE EXPERIMENT

TO Study and verify The truth table of Logic gates

APPARATUS REQUIRED

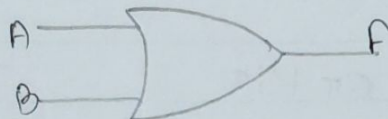
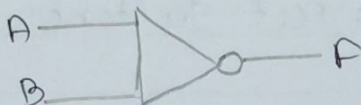
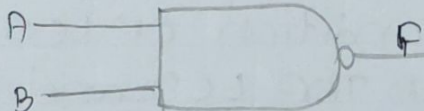
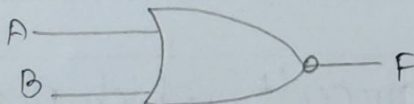
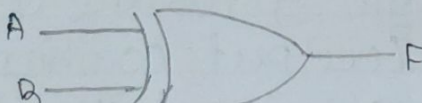
- i) Trainer Kit
- ii) Patch cord (Its per required)

PROCEDURE

- i) Place The IC on IC Trainer Kit
- 2) connect VCC and Ground to respective pins of IC trainer kit
- 3) connect The inputs to The input switches provided in The IC trainer kit.
- 4) connect The output to The switches of o/p LEDs.
- 5) Apply various combination of input according to The Truth table and observe condition of LED's
- 6) Disconnect output from The LED and notedown The corresponding ~~multimeter~~ voltage reading for various combinations of inputs.

THEORY

Logic gates are electronic circuit which perform logical function on one or more inputs to produce one output. There are seven logic gates whereas the input-combination of a logic gates are written along them. Then this input/output combination is called truth table. Various gates and their working is explained here.

NAME	GRAPHICAL SYMBOL	ALGEBRIC FUNCTION	TRUTH TABLE															
AND		$F = A \cdot B$ OR $F = AB$	<table><tr><th>A</th><th>B</th><th>F</th></tr><tr><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td>1</td><td>0</td></tr><tr><td>1</td><td>0</td><td>0</td></tr><tr><td>1</td><td>1</td><td>1</td></tr></table>	A	B	F	0	0	0	0	1	0	1	0	0	1	1	1
A	B	F																
0	0	0																
0	1	0																
1	0	0																
1	1	1																
OR		$F = A + B$	<table><tr><th>A</th><th>B</th><th>F</th></tr><tr><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td>1</td><td>1</td></tr><tr><td>1</td><td>0</td><td>1</td></tr><tr><td>1</td><td>1</td><td>1</td></tr></table>	A	B	F	0	0	0	0	1	1	1	0	1	1	1	1
A	B	F																
0	0	0																
0	1	1																
1	0	1																
1	1	1																
NOT		$F = \bar{A}$ OR $F = A'$	<table><tr><th>A</th><th>F</th></tr><tr><td>0</td><td>1</td></tr><tr><td>1</td><td>0</td></tr></table>	A	F	0	1	1	0									
A	F																	
0	1																	
1	0																	
NAND		$F = \overline{AB}$	<table><tr><th>A</th><th>B</th><th>F</th></tr><tr><td>0</td><td>0</td><td>1</td></tr><tr><td>0</td><td>1</td><td>1</td></tr><tr><td>1</td><td>0</td><td>1</td></tr><tr><td>1</td><td>1</td><td>0</td></tr></table>	A	B	F	0	0	1	0	1	1	1	0	1	1	1	0
A	B	F																
0	0	1																
0	1	1																
1	0	1																
1	1	0																
NOR		$F = \overline{A + B}$	<table><tr><th>A</th><th>B</th><th>F</th></tr><tr><td>0</td><td>0</td><td>1</td></tr><tr><td>0</td><td>1</td><td>0</td></tr><tr><td>1</td><td>0</td><td>0</td></tr><tr><td>1</td><td>1</td><td>0</td></tr></table>	A	B	F	0	0	1	0	1	0	1	0	0	1	1	0
A	B	F																
0	0	1																
0	1	0																
1	0	0																
1	1	0																
XOR		$F = A \oplus B$	<table><tr><th>A</th><th>B</th><th>F</th></tr><tr><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td>1</td><td>1</td></tr><tr><td>1</td><td>0</td><td>1</td></tr><tr><td>1</td><td>1</td><td>0</td></tr></table>	A	B	F	0	0	0	0	1	1	1	0	1	1	1	0
A	B	F																
0	0	0																
0	1	1																
1	0	1																
1	1	0																

NOT GATE

NOT gate produces the complement of its input. This gate is also called an inverter. It always has one input and one output. Its output is 0 when input is 1 and 1 when input is 0.

AND GATE

AND gate produces an output as 1 when all its inputs are 1; otherwise the output is 0. This gate can have a minimum of 2 inputs but the output is always one. Its output is 0 when any input is 0.

OR GATE

OR gate produces an output as 1 when any or all its inputs are 1; otherwise the output is 0. This gate can have a minimum of 2 inputs but the output is always one. Its output is 0 when all inputs are 0.

NAND GATE

NAND gate is actually a series of AND gate with NOT gate. If we connect the output of an AND gate to the input of a NOT gate, this combination will work as NOT-AND or NAND gate. Its output is 1 when any or all inputs are 0; otherwise the output is 0.

NOR GATE

NOR gate is actually a series of OR gate with NOT gate. If we connect the output of an OR gate to the input of a NOT gate, this combination will work

as NOT OR ORC NOR Gate. its output is 0 when any or all input are 1. other wise output is 1

EXCLUSIVE OR (X-OR) GATE

X-OR gate produces an output as 1

when number of 1s at its input is odd, otherwise output is 0. it has two input and one output.

EXCLUSIVE NOR (X-NOR) GATE

X-NOR Gate produces output as 1 when number of 1's at its input is not odd. otherwise output is 0. it has two input and one output.

CONCLUSION

From The above experiment we verify the all the gates and truth table.

Murthy
26/12/23

SUBMITTED BY

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