

NPIU

TEQIP-3

Technical Education Quality Improvement Programme



KLE Technological
University
Creating Value
Leveraging Knowledge

4 DAYS ONLINE WORKSHOP ON

TRAIN THE TRAINERS ON EXAMINATION REFORMS

Organized by : BVB College of Engineering & Technology, Hubballi

In collaboration with : National Project Implementation Unit (NPIU)

On 4th, 5th, 6th & 7th December 2020

Certificate of Participation

This certificate is awarded to

Prof. (Dr.) Pravin Sonwane, Poornima College of Engineering, Jaipur

for successful participation in the Online Workshop held during 4-7 December 2020.

Dr. Prakash Tewari

Principal

BVB College of Engineering & Technology, Hubballi

Dr. Gopalkrishna Joshi

Executive Director & Member Secretary

Karnataka State Higher Education Council, GOK

Prof. P. M. Khodke

Central Project Advisor

NPIU, TEQIP III

Dr. Ashok Shettar

Vice Chancellor

KLE Technological University, Hubballi

NPIU

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Certificate of Participation

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Dr. Ashok Shettar

Vice Chancellor

KLE Technological University, Hubballi



AICTE-EXAMINATION REFORMS WORKSHOP

Certificate of Participation

This is to certify that

Prof./Dr./Mr./Mrs./Ms. Dr Sanjay Bhargava

has participated in three days' Examination Reforms workshop in online mode

held from 29.01.2021 to 01.02.2021 jointly conducted by AICTE & KLE

Technological University, Hubli, Karnataka

Col. B. Venkat

Director

Faculty Development, AICTE

Dr. Ashok Shettar

Vice-Chancellor

KLE Technological University

FIRST MID TERM EXAMINATION 2021-22

Code: 5ME4-04 Category: PCC Subject Name–DESIGN OF MACHINE ELEMENTS-I
(BRANCH – MECHNAICAL ENGINEERING)

Course Credit: 02

Max. Marks: 40

Max. Time: 2 hrs.

NOTE:- Read the guidelines given with each part carefully.**Course Outcomes (CO):**

At the end of the course the student should be able to:

CO1:

CO2:

CO3:

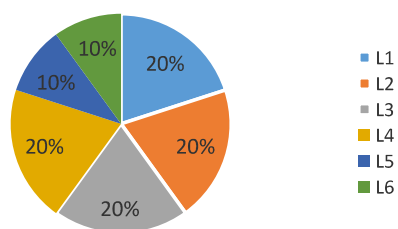
CO4:

CO5:

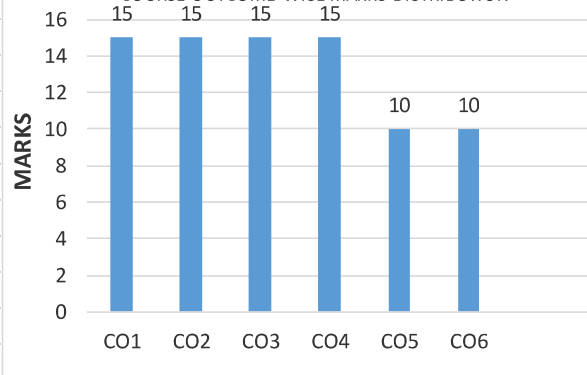
CO6:

PART - A: (All questions are compulsory) Max. Marks (5)					
		Marks	CO	BL	PO
Q.1		1			
Q.2		1			
Q.3		1			
Q.4		1			
Q.5		1			
PART - B: (Attempt 4 questions out of 6) Max. Marks (20)					
Q.6		5			
Q.7		5			
Q.8		5			
Q.9		5			
Q.10		5			
Q.11		5			
PART - C: (Attempt 2 questions out of 3) Max. Marks (15)					
Q.12		7.5			
Q.13		7.5			
Q.14		7.5			

BLOOM's LEVEL WISE MARKS DISTRIBUTION



COURSE OUTCOME WISE MARKS DISTRIBUTION



BL – Bloom's Taxonomy Levels (1- Remembering, 2- Understanding, 3 – Applying, 4 – Analyzing, 5 – Evaluating, 6 - Creating)

CO – Course Outcomes; PO – Program Outcomes

FIRST MID TERM EXAMINATION 2021-22

Code: 5ME4-04 Category: PCC Subject Name–DESIGN OF MACHINE ELEMENTS-I
(BRANCH – MECHNAICAL ENGINEERING)

Course Credit: 03

Max. Marks: 60

Max. Time: 2 hrs.

NOTE:- Read the guidelines given with each part carefully.**Course Outcomes (CO):**

At the end of the course the student should be able to:

CO1:

CO2:

CO3:

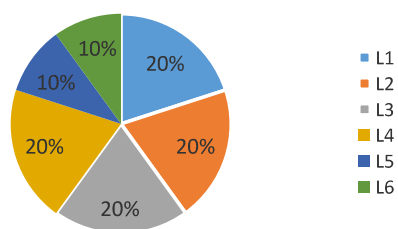
CO4:

CO5:

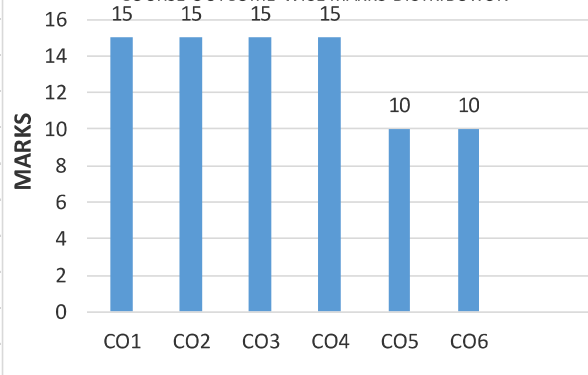
CO6:

PART - A: (All questions are compulsory) Max. Marks (10)					
		Marks	CO	BL	PO
Q.1		2			
Q.2		2			
Q.3		2			
Q.4		2			
Q.5		2			
PART - B: (Attempt 4 questions out of 6) Max. Marks (20)					
Q.6		5			
Q.7		5			
Q.8		5			
Q.9		5			
Q.10		5			
Q.11		5			
PART - C: (Attempt 3 questions out of 4) Max. Marks (30)					
Q.12		10			
Q.13		10			
Q.14		10			
Q. 15		10			

BLOOM's LEVEL WISE MARKS DISTRIBUTION



COURSE OUTCOME WISE MARKS DISTRIBUTION



BL – Bloom's Taxonomy Levels (1- Remembering, 2- Understanding, 3 – Applying, 4 – Analyzing, 5 – Evaluating, 6 - Creating)

CO – Course Outcomes; PO – Program Outcomes

FIRST MID TERM EXAMINATION 2021-22

Code: 5ME4-04 Category: PCC Subject Name–DESIGN OF MACHINE ELEMENTS-I
(BRANCH – MECHNAICAL ENGINEERING)

Course Credit: 04

Max. Marks: 80

Max. Time: 2 hrs.

NOTE:- Read the guidelines given with each part carefully.**Course Outcomes (CO):**

At the end of the course the student should be able to:

CO1:

CO2:

CO3:

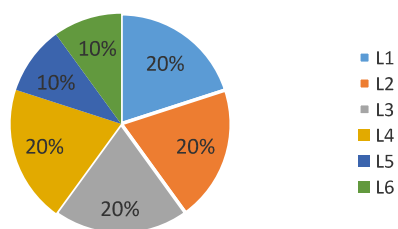
CO4:

CO5:

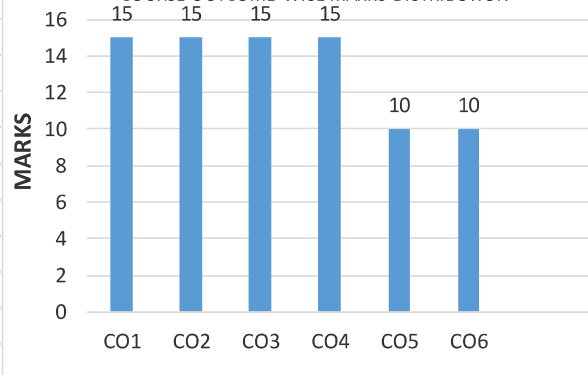
CO6:

PART - A: (All questions are compulsory) Max. Marks (10)					
		Marks	CO	BL	PO
Q.1		2			
Q.2		2			
Q.3		2			
Q.4		2			
Q.5		2			
PART - B: (Attempt 4 questions out of 6) Max. Marks (28)					
Q.6		7			
Q.7		7			
Q.8		7			
Q.9		7			
Q.10		7			
Q.11		7			
PART - C: (Attempt 3 questions out of 4) Max. Marks (42)					
Q.12		14			
Q.13		14			
Q.14		14			
Q. 15		14			

BLOOM's LEVEL WISE MARKS DISTRIBUTION



COURSE OUTCOME WISE MARKS DISTRIBUTION



BL – Bloom's Taxonomy Levels (1- Remembering, 2- Understanding, 3 – Applying, 4 – Analyzing, 5 – Evaluating, 6 - Creating)

CO – Course Outcomes; PO – Program Outcomes

SECOND MID TERM EXAMINATION 2021-22

Code: 7EE6-60.1 Category: PCC Subject Name—ELECTRICAL MACHINE AND DRIVE
(BRANCH –ELECTRICAL ENGINEERING)

Course Credit: 03

Max. Marks: 60

Max. Time: 2 hrs.

NOTE:- Read the guidelines given with each part carefully.**Course Outcomes (CO):**

At the end of the course the student should be able to:

CO1: Understand the constructional details and principle of operation of rotating electrical machines

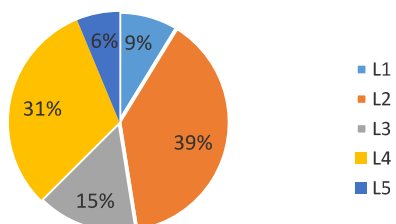
CO2: Acquire knowledge about the working principle and various aspects of electric drives.

CO3: study and analyze the various control techniques for speed control on various electric drives.

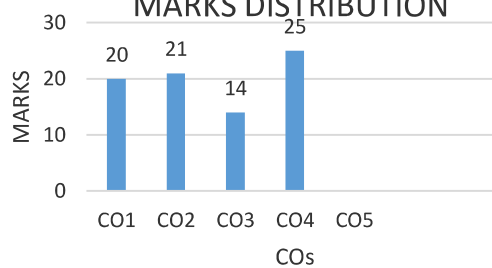
CO4: Develop design knowledge on how to design the speed control and current control loops of an electric drive

PART - A: (All questions are compulsory) Max. Marks (10)					
		Marks	CO	BL	PO
Q.1	Define the term soft starting.	2	2	1	1
Q.2	What is time ratio control?	2	3	2	1
Q.3	Draw the Speed torque characteristics for regenerative braking.	2	3	2	2
Q.4	Suggest suitable motors for textile and paper mill drive applications.	2	2	3	2
Q.5	What are the advantages and disadvantages of electrical braking?	2	2	2	1
PART - B: (Attempt 4 questions out of 6) Max. Marks (20)					
Q.6	What are the various types of drives?	5	2	1	1
Q.7	Explain the dynamic braking for D.C. series motor	5	1	2	1
Q.8	Explain working of current control loop and speed control loop.	5	4	4	1
Q.9	What is Current Limit Control of Chopper? Explain with Diagram.	5	4	4	2
Q.10	A 200 V, 10.5A, 2000 rpm shunt motor has the armature and field resistance of 0.5 and 400 Ω respectively. It drives a load whose torque is constant at rated motor torque. Calculate motor speed if source voltage drops to 175 V.	5	1	5	2
Q.11	Explain the operation of a closed-loop speed control scheme with inner current control loop.	5	4	4	2
PART - C: (Attempt 3 questions out of 4) Max. Marks (30)					
Q.12	Explain electric braking for D.C. separately excited motor, connection diagrams and speed - torque curves.	10	1	2	2
Q.13	Explain the four quadrant operations in motor.	10	3	2	1
Q.14	How is a motor rating determined in a short-time duty?	10	2	4	1
Q.15	Briefly explain various closed loop control configurations of drives.	10	4	3	2

BLOOM's LEVEL WISE MARKS DISTRIBUTION



COURSE OUTCOME WISE MARKS DISTRIBUTION



BL – Bloom's Taxonomy Levels (1- Remembering, 2- Understanding, 3 – Applying, 4 – Analyzing, 5 – Evaluating, 6 - Creating)

CO – Course Outcomes; PO – Program Outcomes

76311

A/B. No. PGC/18/.....



POORNIMA

GROUP OF COLLEGES

Theory

Name of Institution..... *Poornima College of engineering*

Course..... *B.Tech.*

Branch..... *CS*

Year..... *IV*

Sem..... *V Sem*

Sec..... *B*

Roll No..... *35*

Name of Exam..... *Mid-term-2*

Day & Date..... *Tuesday & 28/12/2024*

Name of Candidate..... *Nandini Singh*

College Registration No..... *PCE18CS099*

Name of Subject/Paper..... *EMP*

Subject/Paper Code..... *FE.E.G-60.1*

Signature of Candidate..... *Nandini*

Name & Signature of Invigilator..... *Hemk*

Question No.	1	2	3	4	5	6	7	8	9	10	Maximum Marks	Signature of Examiner
Marks Obtained	1	2	1	0			5	5	5		60	
											44	

INSTRUCTIONS :

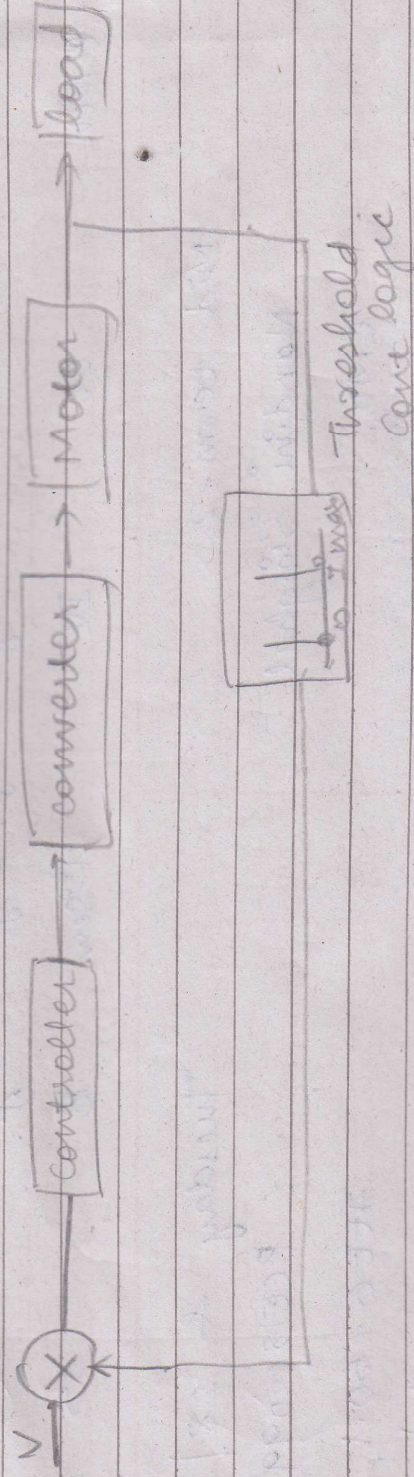
- No Supplementary answer books will be issued. Write on each ruled line on both sides of the leaf. Please do not waste pages unnecessarily.
- Bringing cell phone / communication devices / programmable calculator (i.e. having memory capacity of more than six number) in exam hall is strictly prohibited Exam. Conducting authorities will not keep them under their custody.
- During the course of examination the candidate shall be under the discipline & control of the invigilator & shall obey all orders passed by invigilators on all matters relating to the examinations.
- Make all due entries on the cover page very carefully only at the space provided for the purpose.

11 12 13 14 15
3 5 8 9

Seal

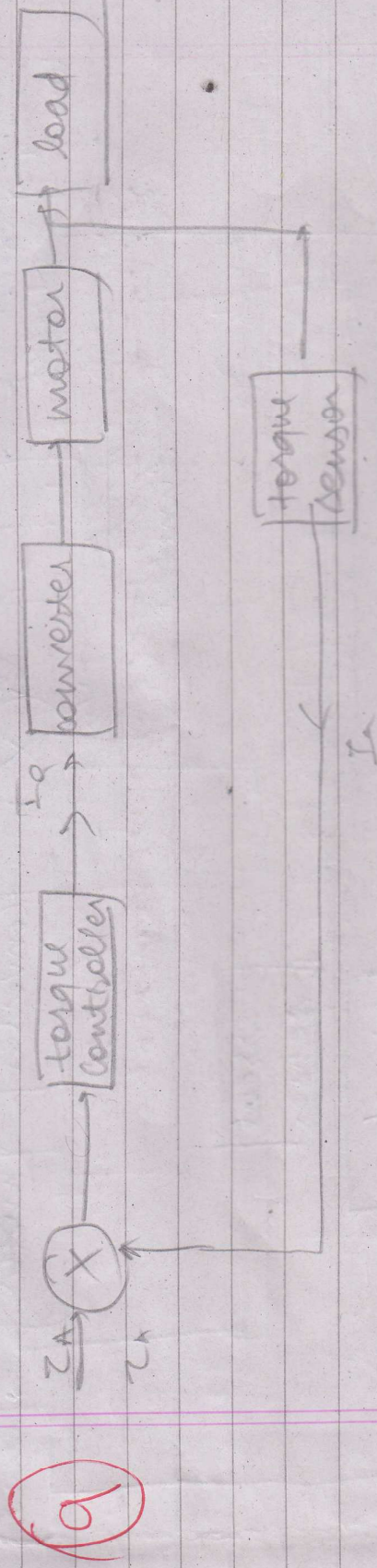
Ans-15 closed loop control

1) closed loop current limit control



- 1) In this the Voltage part is passed and then it is Connected to Controller
- 2) Controller is then passed to Converter the Voltage and the Voltage becomes low
- 3) Then Motor and if the load is more it will be flux higher

2) closed loop torque control

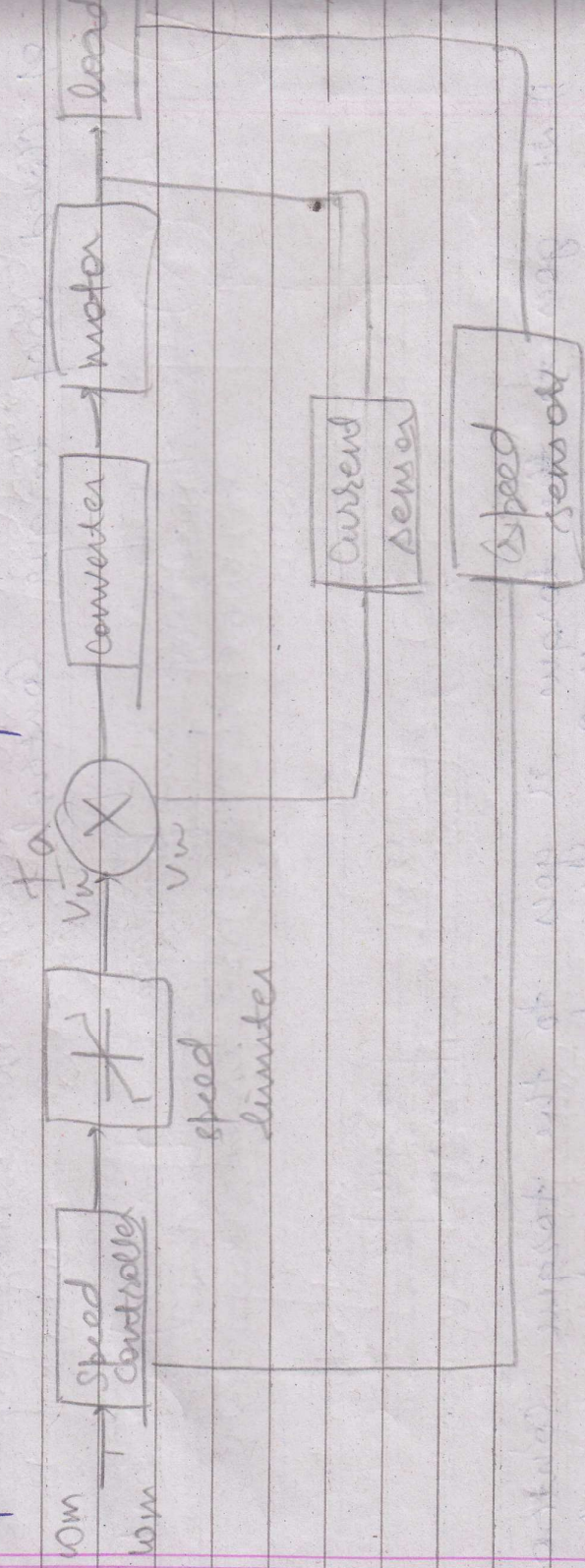


- 1) It goes to the torque T^* goes to the torque controller when we on something T^* becomes zero and torque should be more
- 2) It goes to motor and load and then transfers to torque sensor so that it can check correctly

3) closed loop speed controller

In this we add speed controller instead of ~~speed~~ torque controller and then we will add speed limiter and then the current control.

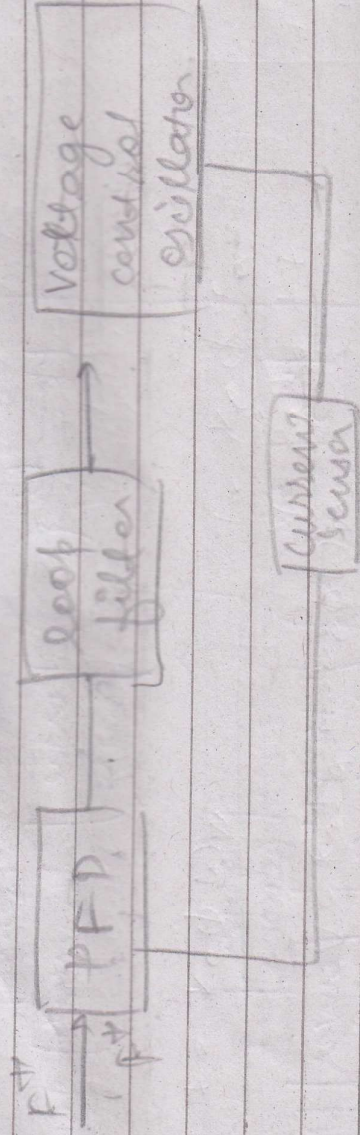
speed limiter currents the speed.



4) closed loop of speed Control of multmotor

in this the torque controllers are made and a Multi Motor means it has torque sensor and a speed sensor both because when a Cox or anything starts the Motor flux current becomes zero or negative and speed it takes in control

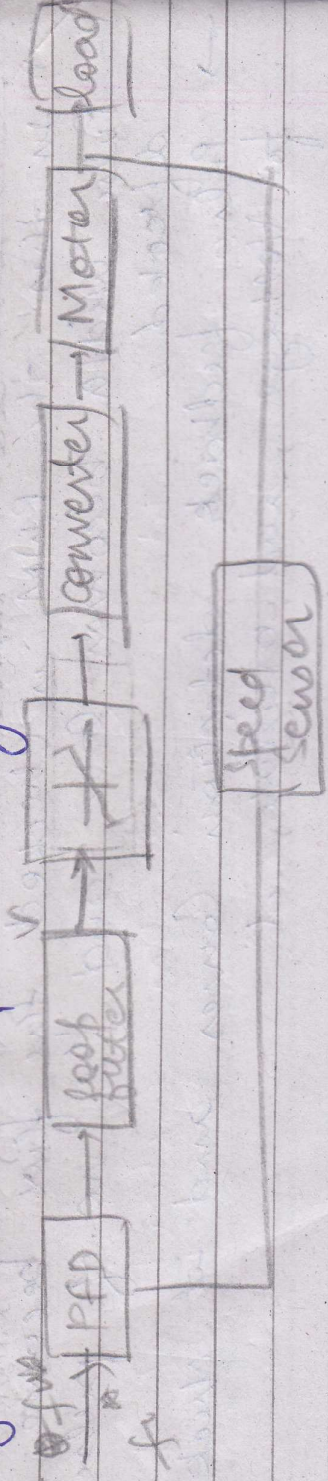
→ It loop filters the Voltage and feedback and then it oscillates Voltage.



It consist of two

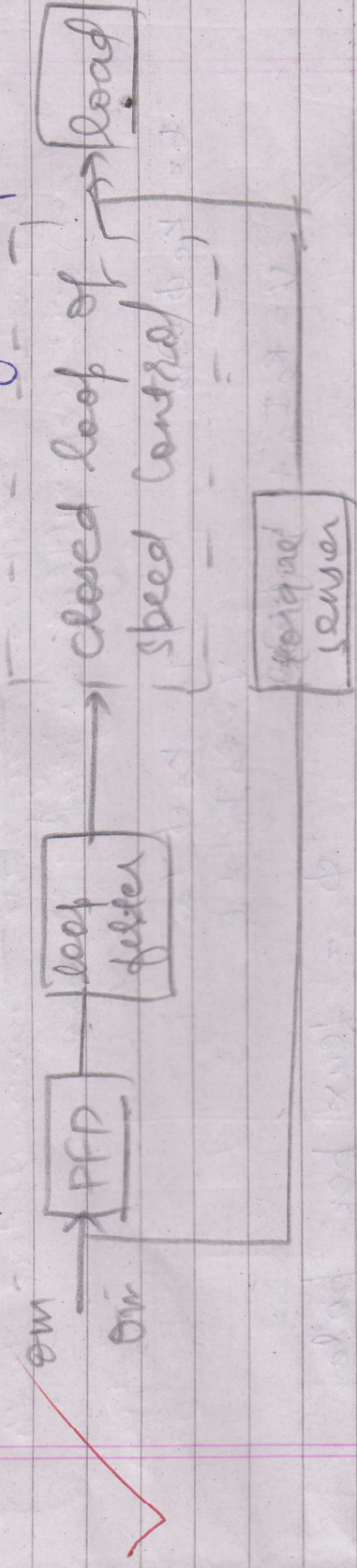
② PII using speed control

It limits the pulse feedback detection it has it changes when the speed changes

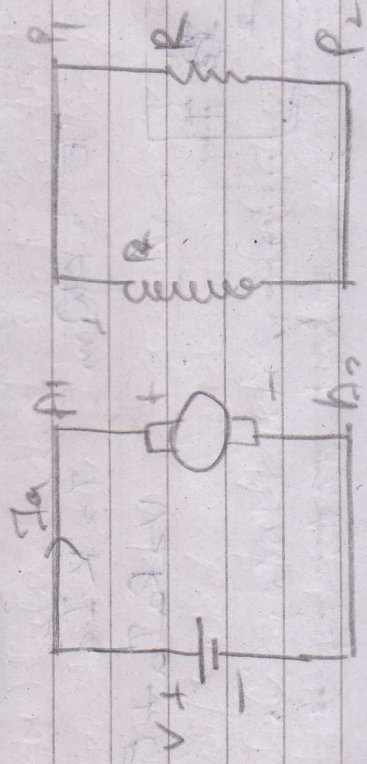


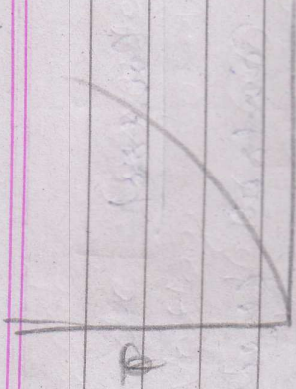
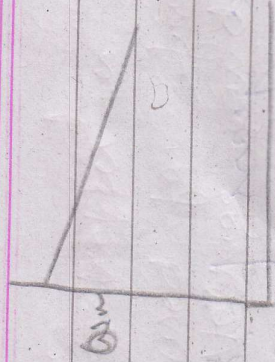
(b) PLL using Position Control

In the position control checks the gear's position



Ans-12 electric braking is the braking means motor acts as a generator which develops a negative torque and reverse the motion





separately excited motors

$$T = k \phi \omega_m$$

$$T = k \phi I_a$$

$$V = R_a I_a + E$$

$$V = R_a I_a + k \phi \omega_m$$

$$\omega_m = \frac{V - R_a I_a}{k \phi}$$

$$\omega_m = \frac{V}{k \phi} - \frac{R_a I_a}{k \phi}$$

$\phi \sim$ flux per pole

$I_a =$ Armature current

$$\omega_m = \frac{V}{k \phi} - \frac{R_a I_a}{k \phi}$$

At point $k \phi = K$

$$E = K \omega_m$$

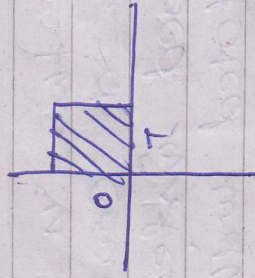
$$T = K I_a$$

$$V = R_a I_a + E$$

$$\left[\omega_m = \frac{V}{K} - \frac{R_a I_a}{K} \right]$$

Ans-13

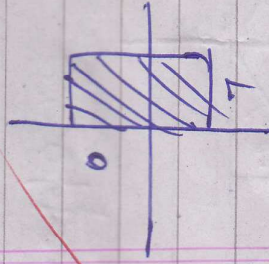
(8)



single quadrant Motor

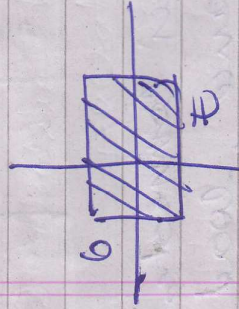
avg Output current +ve

avg Output Voltage +ve



avg output Voltage +ve or -ve

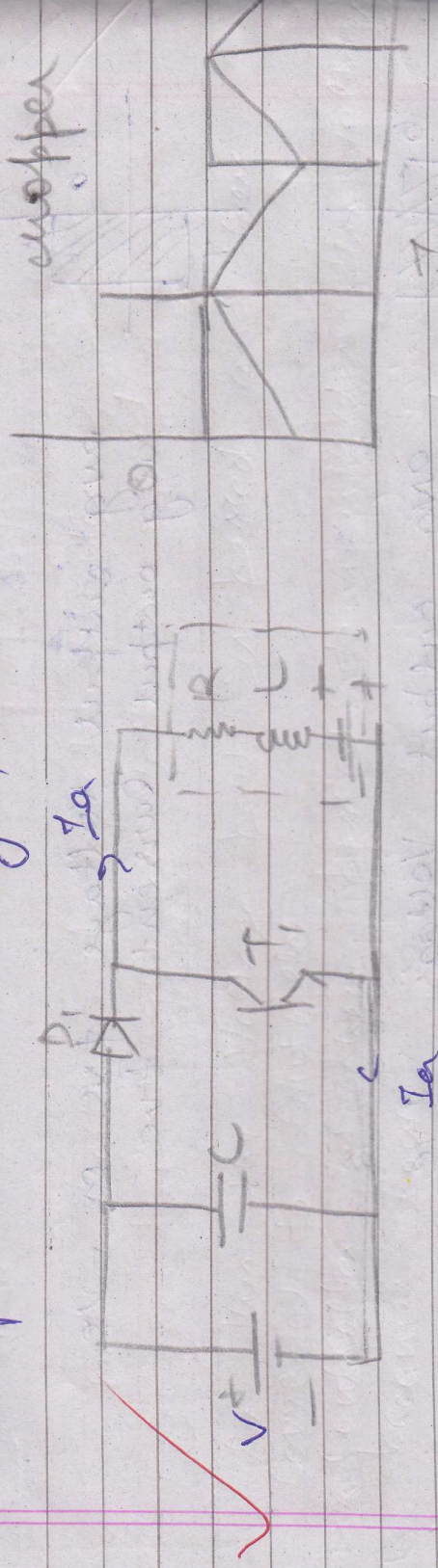
avg output Current +ve



avg output Voltage +ve

avg output Current +ve or -ve

Ans-9 chopper is a dc to dc Converter and this is used for fixed dc Voltage to Variable dc source Voltage and MOSFET, IGBT, GTO are used instead of Thyristor because they are commutated with low power Control Signal.



We have given the Voltage everything is connected with capacitor, diode, Thyristor, Resistance, load etc.

$$R_a I_a + V_a \frac{di_a}{dt} + E = V$$

In the interval time when the Motor is connected to the source is called duty cycle

(5)

$$0 \leq t \leq T_{ON}$$

$$\delta = \frac{\text{Duty cycle}}{T} = \frac{T_{ON}}{T}$$

In interval when T_{ON} is turned off in the freewheeling situation come when T_{ON} is turned off this is called freewheeling situation.

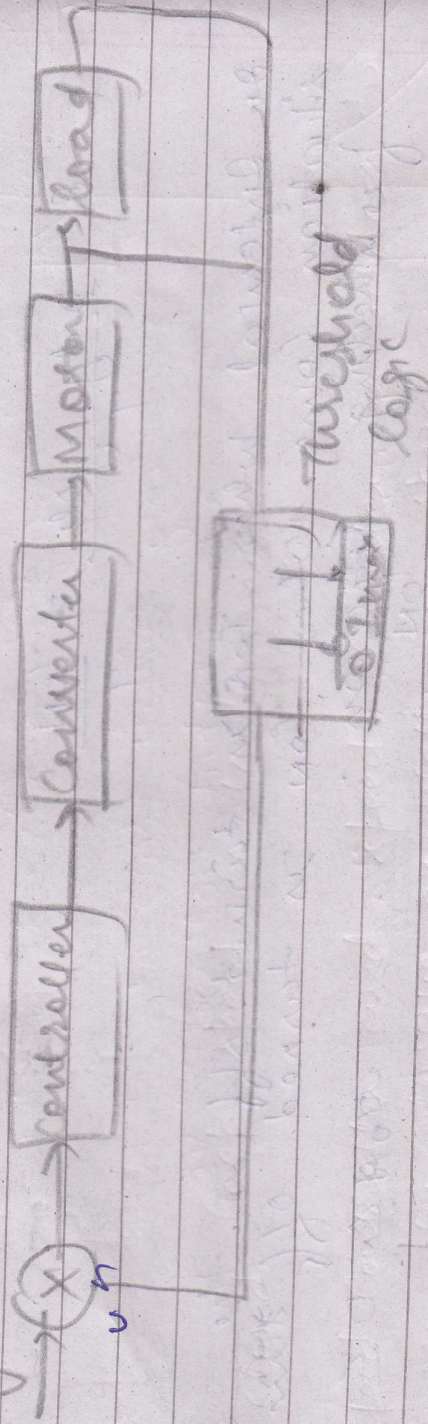
$$T_{ON} \leq t \leq T$$

$$\delta = \frac{1}{T} \int_0^{T_{ON}} 0 \, V dt$$

$$\delta = V \frac{T_{ON}}{T}$$

$$\boxed{\delta = \frac{8V - E}{R_a}}$$

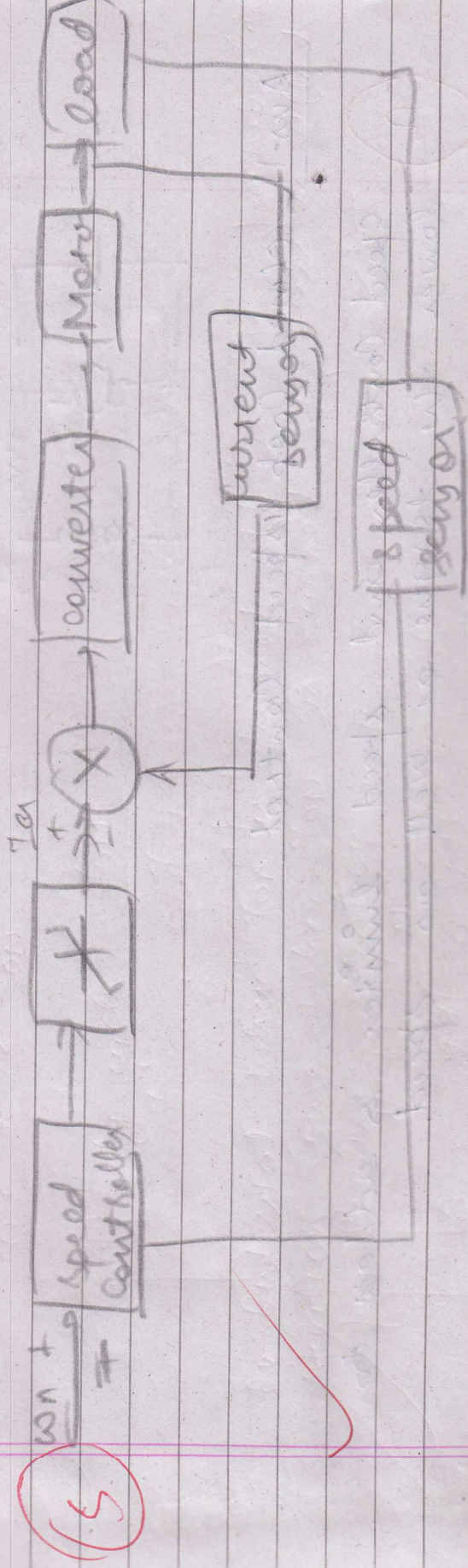
Ans-8 closed current loop



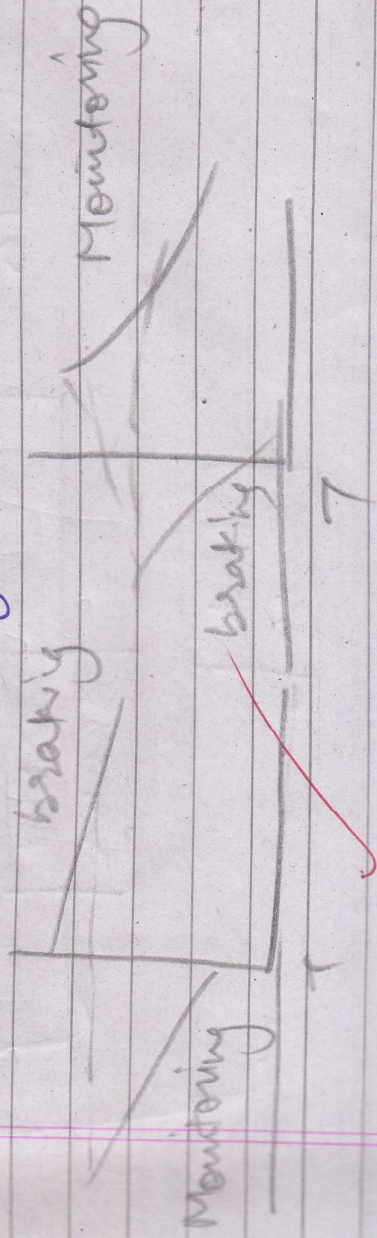
- In this the Voltage part is passed and then connected to Controller
- Controller is then passed to Converter the Voltage becomes low
- The flux will change if the load is more

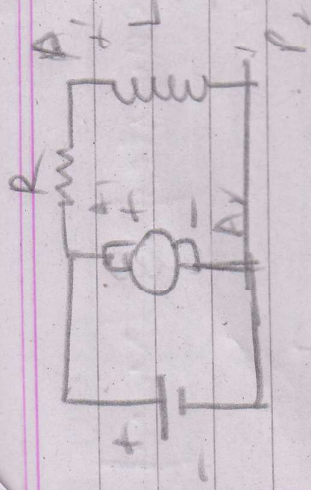
Speed Control loop

In this we add the speed Controller and the speed limiter because it sets the speed limit upto so that torque and load should remain cool.



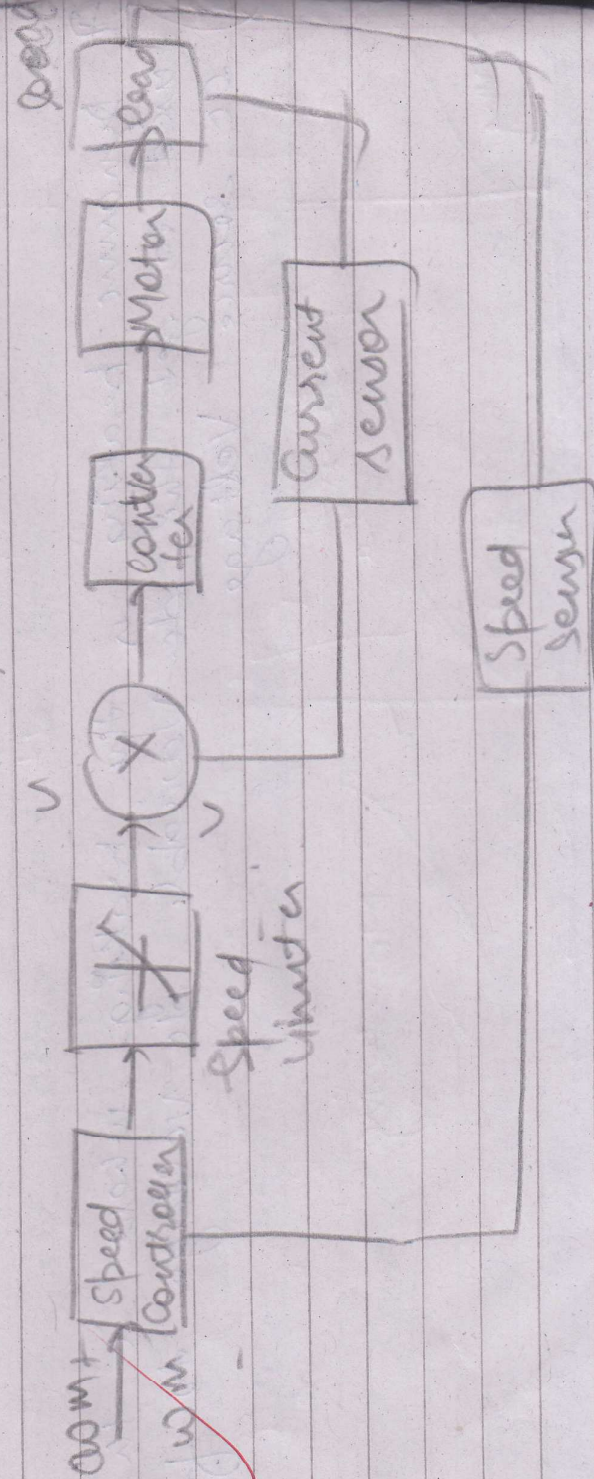
Ans-7 Dynamic braking is the braking where it the is used to get the dc variable dc voltage to fixed ac source voltage





Ans-11) closed loop speed control

Speed Controller and speed limiter is added to lower the torque as well as speed.



Ans-2 Time ratio control is it has frequency Variable Method and Constant Variable Method and

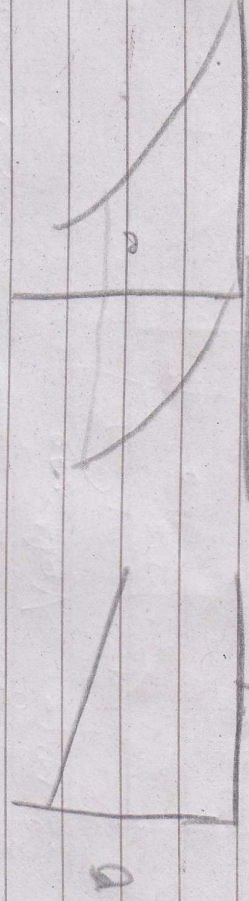
FVM

It has $\frac{1}{T}$ it means frequency is variable and time is constant

CVM

It has $k = \frac{T}{\omega}$ means ω is variable and frequency is constant

Ans-3



Ans-7 Soft starting means engines starts slow means torque and motor starts slow and which remains zero

Ans-7 Electric Motor