This document is a part of Main Course File	Document No.: CFM – 8

SARDAR VALLABHBHAI PATEL EDUCATION SOCIETY
MANAGED

N. G. PATEL POLYTECHNIC

ELECTRICAL ENGINEERING DEPARTMENT

ASSIGNMENTS

Course Name (With Code): Power Electronics and Drives (4350902)

Semester / Year: Fifth/Third

Assignment Number: 1

Assignment CO Number:4350902.1

Sr. No.	Questions related to Course Outcomes
Part – A	**Questions carrying 3 Marks**
1	Draw the symbol of GTO, IGBT,MCT, UJT, Diac and Triac.
2	Explain the working of SCR using two transistor analogy.
3	Draw and explain the thermal equivalent circuit of SCR.
4	Draw and explain electrical equivalent circuit of IGBT.
5	Write comparison between natural and forced commutation.
Part – B	**Questions carrying 4 Marks**
1	Draw and explain construction and working of IGBT using characteristics.
2	Draw and explain construction and working of UJT using characteristics.
3	Explain the construction & working of GTO.
4	Explain turn off characteristics of SCR.
5	Write short note on MCT.
Part – C	**Questions carrying 7 Marks**
1	State different method of mounting of SCR. Explain any two.
2	Explain different types of protection of SCR.
3	What is commutation of SCR? Explain different types of commutation method.
4	What is thermal resistance? Draw the thermal equivalent circuit of SCR.
5	Explain the construction and working of GTO. Also, state its applications.

Rakesh H. Maisuriya	
Prepared By: (Name of Faculty (ies)) with signature	**Signature of Head of Department**

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ASSIGNMENTS

Course Name (With Code): Power Electronics and Drives (4350902)

Semester / Year: Fifth/Third

Assignment Number: 2

Assignment CO Number: 4350902.2

Sr. No.	Questions related to Course Outcomes
Part – A	**Questions carrying 3 Marks**
1	Explain effect of transformer reactance on rectifier circuit.
2	Write advantages of polyphase rectifier over single phase rectifier.
3	Write short note on Pulse transformer.
4	Explain AC load control using two SCRs and two Diodes.
5	Explain role of electronic regulators and controlled rectifiers in energy conservation.
Part – B	**Questions carrying 4 Marks**
1	Explain three phase half wave rectifier with necessary waveforms.
2	Derive the equation for Irms and Erms for three phase half wave rectifier.
3	Explain three phase full wave rectifier with necessary waveforms.
4	Explain six phase half wave rectifier with necessary waveforms.
5	What is the need of controlled rectifier? Write the applications of controlled rectifier.
Part – C	**Questions carrying 7 Marks**
1	Enlist the method of firing angle control of SCR. Explain RC phase shift control method.
2	Explain full wave controlled rectifier using LR phase shift control and RC phase shift control method.
3	Explain pulse control of SCR using UJT full wave rectifier.

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ASSIGNMENTS

Course Name (With Code): Power Electronics and Drives (4350902)

Semester / Year: Fifth/Third

Assignment Number: 3

Assignment CO Number: 4350902.3

Sr. No.	Questions related to Course Outcomes
Part – A	**Questions carrying 3 Marks**
1	Explain working principle of chopper.
2	Draw and explain different configuration of chopper.
3	Explain class C chopper.
4	Give classification of inverter.
5	Compare voltage source inverter and current source inverter.
Part – B	**Questions carrying 4 Marks**
1	Explain class B chopper with circuit diagram and waveform.
2	Explain single phase series inverter.
3	Explain single phase full bridge inverter.
4	Draw and explain 3-level capacitor clamped multilevel inverter with its advantages and disadvantages.
5	Draw and explain block diagram of solar system using inverter and buck boost converter.
Part – C	**Questions carrying 7 Marks**
1	Draw and explain Jones Chopper and Morgan's chopper.
2	Explain different control technique of chopper.
3	State different methods of PWM control& explain it. Write the advantages of PWM control.

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ASSIGNMENTS

Course Name (With Code): Power Electronics and Drives (4350902)

Semester / Year: Fifth/Third

Assignment Number: 4

Assignment CO Number: 4350902.4

Sr. No.	Questions related to Course Outcomes
Part – A	**Questions carrying 3 Marks**
1	Draw and explain block diagram of electric drive.
2	Write advantages and disadvantages of electric drive.
3	Explain single phase dc drive.
4	Explain single phase half wave converter drive.
5	Explain regenerative braking in electric drive with its advantages.
Part – B	**Questions carrying 4 Marks**
1	Explain factors to be considered while selecting electric motors for different electric drive.
2	Explain AC drive with block diagram and write its advantages and disadvantages of electric drive.
3	Explain variable frequency drive.
4	Explain speed control of three phase induction motor using chopper.
5	Explain single phase semi converter drive.
Part – C	**Questions carrying 7 Marks**
1	Explain single phase full converter drive.
2	Write types of cycloconverter and explain center tapped transformer cyclo converter.
3	Explain single phase to single phase bridge type cyclo converter with purely resistive load.

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