UTM
UNIVERSITI TEKNOLOGI MALAYSIA

SKEE 3742

SEKOLAH KEJURUTERAAN ELEKTRIK
FAKULTI KEJURUTERAAN

UNIVERSITI TEKNOLOGI MALAYSIA

POWER ELECTRONICS LABORATORY
DESIGN SHEET

Basic AC to DC Converter

Disediakan oleh:	Disahkan oleh:
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Tarikh : 18 Julai 2019	Tarikh : 18 Julai 2019

Project Introduction:

Energy conversion is vital in our daily activities especially when the load characteristic does not match the available electrical power supply. For instance, how to produce a variable DC supply to drive a DC motor where only AC source such as source from TNB/IPP is available. A power modulator (rectifier) definitely needed to do the job. Besides, certain application required the control of power flow from source to the output. Furthermore, the selection of the power converter topology itself determines the size of the power flow control.

Project tasks:

In this laboratory assignment, students are required to carry out a brief literature review, design and implement the energy conversion (power modulator) circuit so that a variable DC output voltage with a continuous load current (CCM) can be produced at the output. The designed converter must be able to supply variable voltage to the passive load such as resistance and inductance. To do the job, only **ONE thyristor (SCR)** is permitted to be used to construct the power modulator. A technical report supported with the set of the data and experimental results is expected to be produced at the end of project time. The collected data, data analysis and plots of waveforms should be well presented in the report.

Few questions need to be answered (Triggers):

- What is the rectifier circuit?
- What type of source is needed?
- What is the circuit topologies available
- What are the application of rectifier circuit
- How the variable DC output voltage is obtained?
- What is the relationship with control angle and generated voltage
- How to improve the load power if the R-L is used?
- How to ensure the continuous current mode