



Subject/Code: **Power Electronics** / ELE 519
This exam measures ILO's no. (A1, A3, A5, B1, B2, B3, C3, C4)
Remarks: No. of pages: 2 No. of questions: 4
Allowed Tables and Charts: (None)

Answer All The Following Questions:

The First Question (25- Marks)

- Define the inverter and mention the main disadvantages? write some applications of it.
- What are the advantages of a three phase rectifier over a single phase rectifier? Show your answer with a simple drawing
- What is the difference between center-tap and bridge in single phase rectifier? Show your answer with a simple drawing
- Mention some applications of ac to dc rectifier.

The Second Question (25- Marks)

- What size inverter do I need?
 - Starting load
 - Continuous load
- What is the principle of phase control for controlled rectifier?
- What is the difference between diode rectifier and controlled rectifier?
- Mention the advantages of controlled rectifier and some application of it, then Compare between types of single phase converter; Show your answer with a simple drawing.

The Third Question (25- Marks):

- What is the main method for voltage control within the inverter? Explain two techniques.
- What is a DC chopper? Mention its applications
- List the main types of chopper and discuss the principle of operation of them.
- Compare between the chopper control methods with the aid of diagrams.

- e) What are the types of switching regulators and explain each type mode of operation?

The Fourth Question (25- Marks)

- a) State the difference between natural and forced Commutations.
b) What are the advantages and disadvantages of harmonic elimination technique?
c) Define AC voltage controller? write some applications of them.
d) List the main types of AC voltage controller?
e) Explain the principle of the on-off control and Phase control for AC voltage controller?
f) What are the disadvantages of AC voltage controller?

*With the best wishes
Prof. Dr. Elwy El-kholy*