Menofiya University Faculty of Engineering Dept of Electrical Engineering.

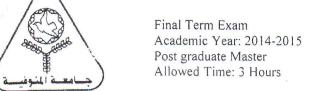
Date: 7 /6/2015 Total Marks: 100 ·

Subject/Code: Power Electronics

/ ELE 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)

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

The Second Question (25- Marks)

- a) What size inverter do I need?
 - Starting load
 - Continuous load
- b) What is the principle of phase control for controlled rectifier?
- c) What is the difference between diode rectifier and controlled rectifier?
- d) 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):

- a) What is the main method for voltage control within the inverter? Explain two techniques.
- b) What is a DC chopper? Mention its applications
- c) List the main types of chopper and discuss the principle of operation of them.
- d) 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