



COLLEGE OF ENGINEERING & TECHNOLOGY

Department: Electrical & Computer Control Engineering

Lecturer : Prof. Dr. Hamdy Ashour

Marks: 40

Course : Power Electronics (II)

Time: 2 hours

Course Code: EE 423

Date : 19 / 01 / 2015

Final Exam

Answer ALL questions

Q1- (10 Marks)

(A4, A8, A12)

Use clear diagrams and give typical application examples to discuss what is meant by:-

- (a) PWM closed loop control technique
- (b) AC static switch
- (c) Importance of gate drive circuits
- (d) Four-quadrant chopper
- (e) Harmonics effects and reduction methods

Q2- (10 Marks)

(A4, A29)

Design power electronic circuit configuration that can be used to:

- (a) Control the speed of the 3ph induction motor fed from 3ph AC fixed supply based on V/F control technique
- (b) Validate the possibility of charging or discharging the electrical vehicle battery from or to the DC micro-grid
- (c) Control the current fed to an 3ph industrial electrical furnace (heater) from 3ph AC supply
- (d) Continuously fed the AC load with electrical power in case of failure of the main supply
- (e) Provide two different isolated DC supplies of 12V and 100V from 24V battery

Q3- (7 Marks)

(A24, B11)

For the circuit shown in figure 1, if the load is $R=20\ \Omega$ and the input voltage is $V_s=220V$ with 50Hz frequency, draw waveforms of gate signals and output voltage and current then calculate the RMS output voltage if:-

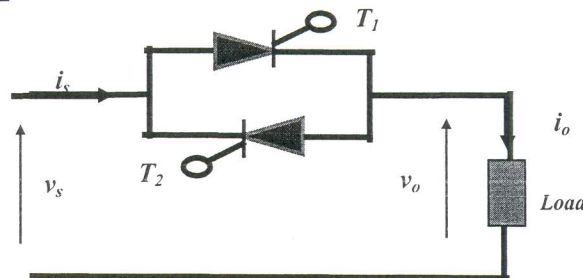


Figure 1

Members of course Examination Committee:	Signature:	Date:
Lecturer: Prof. Hamdy Ashour	Hamdy	19 / 1 / 2015
Course Coordinator : Dr Ahemd Kadery	Ahmed	19 / 1 / 2015
Head of Department: Prof. Hamdy Ashour	Hamdy	19 / 1 / 2015

