

COLLEGE OF ENGINEERING & TECHNOLOGY

Department : Electrical & Control Engineering

Lecturer : Dr. Ali Ibrahim

Course : Electrical Drives II

Course Code : EE 522

Marks : 40

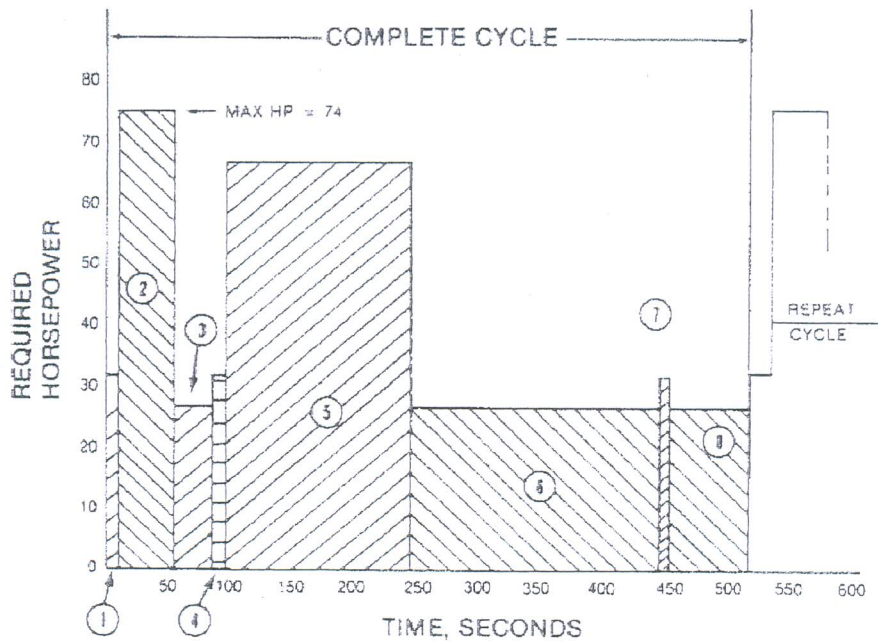
Date : 09/01/2016

Time : 2 hour



A. Answer the following questions:

1. Size the IM motor for the varying duty cycle described in the horsepower versus time graph



(5 Marks)

2. A supply system supplies the following loads:
 - a) A lighting load of 500kW
 - b) 400kW at p.f. 0.7071 lagging
 - c) 800 kW at p.f. 0.8 leading
 - d) 500kW at p.f. 0.6 lagging
 - e) A synchronous motor driving a 360kW d.c. generator and having overall efficiency of 90%.

Calculate the power factor of the motor so that the station p.f. may be unity

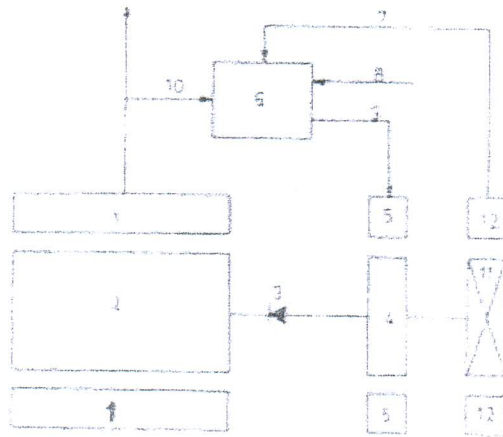
(5 Marks)

3. Describe in detail with drawing how Field Oriented Control – FOC is used to control induction motor drive

(5 Marks)

Members of course Examination Committee:		Signature:	Date:
Lecturer:	Dr Ali Ibrahim	<i>[Signature]</i>	04/01/2016
Course Coordinator :	Dr Ahmed Kadry	<i>[Signature]</i>	4/1/2016
Head of Department:	Prof. Hamdy Ashour	<i>[Signature]</i>	4/1/2016

Mention the marked components in schematic diagram of synchronous generator excitation system



(5 Degrees)

B. Answer only 5 questions from the following:

(4 Marks for each question)

1. Describe the effect of:
 - A. Faulty synchronization between synchronous generators
 - B. Missing transformer paralleling conditions
 - C. 50 Hz operation of 60 Hz motors
 - D. Number of starts on induction motor life
2. List with drawing the methods that makes the single phase induction motor self-starting motor?
3. How does an induction generator work?
4. Describe the effect of changing Governor and VAR set points in synchronous generators
5. Describe the causes and effects of accidental loss of field excitation in synchronous generators
6. What are the considerations for selecting transformers?
7. What is the definition of the following terms:

<ol style="list-style-type: none"> A. Transformers A. BIL B. % Impedance C. Vector group D. Zigzag Transformers 	<ol style="list-style-type: none"> B. Motors E. Design Letter F. Frame size G. Code H. ODP
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ers of course Examination Committee:	Signature:	Date:
Lecturer: Dr Ali Ibrahim	<i>[Signature]</i>	04/01/2016
Course Coordinator : Dr Ahmed Kadry	<i>[Signature]</i>	31/1/2016
Head of Department: Prof. Hamdy Ashour	<i>[Signature]</i>	4/1/2016