

**6E3044**

Roll No. \_\_\_\_\_

Total No of Pages: **3****6E3044****B.Tech. VI Sem. (Main & Back) Exam. May/June 2013****Electronic Inst. & Control Engg.****6EI3 Industrial Electronics****Common with 6AI EC3, & 6EI3****Time: 3 Hours****Maximum Marks: 80****Min. Passing Marks: 24***Instructions to Candidates:*

*Attempt any **five questions**, selecting **one question** from **each unit**. All questions carry **equal marks**. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.*

*Units of quantities used/calculated must be stated clearly.*

*Use of following supporting material is permitted during examination.*

1. \_\_\_\_\_

2. \_\_\_\_\_

### **UNIT – I**

Q.1. (a) Draw and Explain the characteristics of SCR. [8]

(b) Draw a snubber circuit for an SCR. How does it provide  $dv/dt$  protection. [8]

### **OR**

Q.1. (a) Explain the working &amp; characteristics of power Transistor. [8]

(b) What do you mean by GTO. Explain its applications, advantages &amp; disadvantages. [8]

## **UNIT – II**

- Q.2. (a) Explain the working and waveforms of three phase voltage source inverter. [8]
- (b) Explain the working of single-phase half wave circuit with RL load and free wheeling diode of rectifiers. [8]

### **OR**

- Q.2. (a) Explain the working and waveforms of single phase current source inverters. [8]
- (b) Explain the various waveforms of three phase bridge rectifiers. [8]

## **UNIT – III**

- Q.3. (a) Explain the circuit diagram of switch mode power supply. rtuonline.com [8]
- (b) Explain the operation of Boost converter and draw the associated wave forms. [8]

### **OR**

- Q.3. (a) What do you mean by chopper? Explain the different type of choppers with suitable diagrams. [8]
- (b) Explain the operation & characteristics of Fly back converter. [8]

## **UNIT – IV**

- Q.4. (a) Describe the transistor chopper controlled separately excited D.C. Motor drive for motoring control and regenerative braking. Draw the speed torque curves for both. [8]
- (b) Explain the closed loop speed control of IM drive with static rotor resistance control. [8]

**OR**

- Q.4. (a) Explain why the stator voltage control is suitable for speed control of IM in fan and pump drives? Draw the various configurations of AC voltage controller for three phase Induction Motor. [8]
- (b) Explain the speed control of three phase induction motors using frequency control methods. [8]

**UNIT – V**

Q.5. Write short notes on the following: -

- (a) Permanent magnet stepper motors. [8]
- (b) Three phase variable reluctance stepper motors. [8]

**OR**

- Q.5. (a) Explain the construction & working of Hybrid stepper motors. [8]
- (b) Explain the working and various characteristics of stepper motors. Also, discuss about its applications, advantages and disadvantages. [8]

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