

**6E3044****6E3044**

**B.Tech VI Sem. (Main/Back) Exam. April-May, 2012**  
**Electronic Inst. & Control Engg.**  
**6E13 Industrial Electronics**  
**Common with 6AI EC3, 6E13**

**Time : 3 Hours****Maximum Marks : 80****Min. Passing Marks : 24***Instructions to Candidates:*

*Attempt any **five questions**. Selecting **one question** from **each unit**.  
 All Question 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 clerly.*

Use of following supporting material is permitted during examination.

1. \_\_\_\_\_ **Nil** \_\_\_\_\_2. \_\_\_\_\_ **Nil** \_\_\_\_\_

### Unit-I

1. (a) Explain the construction & working of DIAC ? Draw the V-I Characteristic of DIAC. 8
- (b) How can you differentiate a power transistor from a Bipolar inunction transistor. 8
- Or
- 1 (a) Explain the working of Triac with suitable diagram .Compare it with SCR. 10
- (b) Give the working principle of GTO . 6

## Unit-II

- 2 (a) Explain in detail, three phase converters. 10
- (b) Draw the suitable waveforms for single phase free wheeling diode. 6

Or

- 2 (a) Derive the relations for single phase half wave controlled rectifier, having resistive load. 8
- (b) What do you mean by current source inverters. Explain its working. 8

## Unit-III

- 3 (a) Differentiate between step up & step down chopper. 6
- (b) Describe the working & utility of UPS. 10

Or

- (a) Briefly define high frequency electronic ballast. 8
- (b) Give the working & necessary relations for CUK regulators/converters. 8

## Unit-IV

- 4 (a) Define the term DC motors. How can we control the speed of 3-phase induction motors? 16

Or

- 4 (a) Explain the Quadrant diagram & working of single phase full wave converter drive. 10
- (b) Explain the need of chopper circuit in single & 3 $\phi$  phase induction motors. 6

### Unit -V

- 5. (a) List down the advantages of dielectric heating. 4
- (b) Explain the working principle of hybrid stepper motors. Give all the required motor diagrams. 12

Or

- 5 (a) Define the term Variable reluctance. How it effects the working of a stepper motor? 8
- (b) Describe dielectric heating control techniques along with its practical applications. 8

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### Unit-I

- (a) Explain the working of DIAC & working of DIAC. Draw the V-I Characteristics of DIAC. 8
  - (b) How can you convert a bipolar transistor from a bipolar into a non transistor. 8
- Or
- (a) Explain the working of IGBT with suitable diagram. Compare it with SCR. 10
  - (b) Give the working principle of GTO. 8