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**BIELE-005**

# DIPLOMA IN ELECTRICAL ENGINEERING (DELVI)

01520

## Term-End Examination

## June, 2013

## BIELE-005 : INDUSTRIAL ELECTRONICS

*Time : 2 hours* *Maximum Marks : 70*

***Note :*** *Attempt **five** questions in all. Question **No.1.** is **compulsory.** All questions carry **equal** marks.*

State **true** or **false**. **7x2=14**

**1.** (a) A thyristor can be turned on by a gate signal but cannot be turned off by another gate signal.

(b) A DIAC can conduct only in one direction.

(c) When thyristors are connected in series it is desirable that they are triggered simultaneously ?

(d) The V-i characteristics of UJT and PUT are similar.

(e) A single phase bridge rectifier circuit has higher peak inverse voltage as compared to the single phase rectifier using centre tapped transformer.

(f) The use of freewheeling diodes improves the waveshape of load current.

(g) In a rectifier circuit with highly inductive load, the load current would be nearly constant.

2. (a) Draw the structure of vertical power transistor and also explain its I.V characteristic. 7

(b) What do you mean by second break-down ? Why and how it occurs ? 7

3. (a) Describe the construction, working principle and modes of operation of a TRIAC. 7

(b) Draw the two transistor analogy or two transistor model of SCR and also derive an expression for anode current. 7

4. Explain, in detail various thyristor turn on methods. 14

5. (a) Discuss the need and use of polyphase rectifier. 7

(b) Explain the working of three phase Delta bridge rectifier. 7

6. Draw the circuit diagram and waveforms of single phase full wave controlled rectifier and also analyse the circuit. 14

7. (a) Discuss the bridge configuration (B2 connection). 7

(b) Explain single phase half controlled bridge rectifier with resistive load and RL Load. 7

8. Write short notes on *any four* of the following : $3\frac{1}{2} \times 4 = 14$

(a) SBS

(b) GTO

(c) IGBT

(d) MOS controlled Thyristor

(e) Rectifying and Inverting modes

(f) UJT