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**Question Paper Code : 31424**

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2013.

Fifth Semester

Electronics and Instrumentation Engineering

EI 2301/EI 51/10133 EI 504 — INDUSTRIAL ELECTRONICS

(Regulation 2008/2010)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Draw the two-transistor model of SCR.
2. What are the merits of MCT?
3. Compare half wave and full wave rectifiers.
4. What is an ac voltage controller?
5. What do you mean by load commutation?
6. What are the advantages of PWM inverter?
7. Draw a two quadrant dc drive circuit.
8. What is meant by self control of synchronous motor drive?
9. What is an online UPS?
10. List the merits of dielectric heating.

PART B — (5 × 16 = 80 marks)

11. (a) Explain the Steady-State Characteristics of triac. (16)

Or

- (b) With necessary diagrams, explain the turn-on and turn-off process of GTO. (16)

12. (a) Explain the operation of a three phase semi converter with highly inductive load and draw the output voltage waveform for firing angle  $(\alpha) = \pi/2$ . (16)

Or

- (b) With neat circuit diagram and waveforms, explain the four quadrant operation of a single phase dual converter. (16)
13. (a) (i) Compare voltage source inverter and current source inverter. (8)  
(ii) Explain the working of a parallel inverter. (8)

Or

- (b) With neat diagrams, explain the working of class A, B, C and D chopper circuits. (16)
14. (a) With necessary diagrams, explain the regenerative and dynamic braking operation of a separately excited DC motor drive. (16)

Or

- (b) Illustrate the following speed control methods of induction motor drive,  
(i) Static stator voltage control (ii) Static rotor resistance control. (16)
15. (a) Explain the design of a four bit synchronous down-counter with its excitation table. (16)

Or

- (b) With neat circuit diagram and waveforms, explain the design and working of SMPS. (16)