Reg. No. : | | | | | | | | | | |

Question Paper Code: 52952

M.E. DEGREE EXAMINATION, JUNE 2016

Elective

Power Electronics and Drives

15PPE513 - MODERN RECTIFIERS AND RESONANT CONVERTERS

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 20 = 100 Marks)

1. (a) Discuss the operation of a single phase full wave controlled rectifier feeding RL load. What is the effect of a adding a freewheeling diode on the performance of the converter? (20)

Or

(b) Draw and explain the operation of three phases fully controlled bridge rectifier? (20)

2. (a) Derive the CPM boost rectifier static input characteristics? (20)

Or

(b) Derive an expression for rectifier efficiency, in terms of V_M, V, $V_{D,}$ R_{ON} and R_e. (20)

3. (a) Explain in detail about modes of zero voltage switching of quasi resonant bust converter? (20)

Or

(b) Explain in detail about modes of zero current switching of quasi resonant boost converter? (20)

4. (a) Describe in detail about state space averaged model for an ideal buck converter? (20)

Or

(b) Write short notes on

(i) Review of linear system analysis

(ii) State space averaging (20)

5. (a) Define Pulse Width Modulation? Explain in detail about voltage mode PWM scheme with necessary diagram? (20)

Or

(b) Describe in detail about design of variable structure controller for the source current shaping of PWM rectifiers. (20)

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