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**Question Paper Code: 55013**

Ph.D COURSE WORK EXAMINATION, MAY 2018

Elective

Course work

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. CO1- Ana (20)  
Or  
(b) Explain the operation of three phases fully controlled bridge rectifier. CO1- Ana (20)
2. (a) Derive an expression for rectifier efficiency, in terms of  $V_M$ ,  $V$ ,  $V_D$ ,  $R_{ON}$  and  $R_e$ . CO2- App (20)  
Or  
(b) Derive the CPM boost rectifier static input characteristics. CO2- App (20)
3. (a) Briefly explain in detail about modes of zero voltage switching of quasi resonant bust converter CO3- U (20)  
Or  
(b) Explain in detail about modes of zero current switching of quasi resonant boost converter. CO3- U (20)
4. (a) Describe in detail about state space averaged model for an ideal buck converter. CO4- U (20)  
Or  
(b) Write short notes on CO4- U (20)
  - (i) Review of linear system analysis and
  - (ii) State space averaging

5. (a) Explain in detail about voltage mode PWM scheme with necessary diagram. CO5-U (20)

Or

(b) Describe in detail about design of variable structure controller for the source current shaping of PWM rectifiers. CO5-U (20)

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