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Question Paper Code: 52T03

M.E. DEGREE EXAMINATION, APRIL 2019

Second Semester

Power Electronics and Drives

15PPE203 – AC DRIVES AND CONTROL

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART - A (5 x 20 = 100 Marks)

1. (a) (i) Explain about torque production in Induction motor. CO1- U (8)
(ii) Explain any one of the braking methods of induction machine. CO1- U (8)
(iii) Draw and explain the general block diagram of drive system. CO1- U (4)
- Or
- (b) (i) Mention the disadvantages of variable voltage constant frequency system. CO1- U (4)
(ii) Explain about torque production in Induction motor. CO1- U (10)
(iii) Develop the equivalent circuit of squirrel cage induction motor. CO1- U (6)
2. (a) (i) Explain the operation of six pulse VSI and CSI fed IM drive. CO2- U (10)
(ii) Draw the control and power schematics of the volts/Hz drive that uses a PWM Inverter. CO2- U (10)
- Or
- (b) (i) Explain in detail about CSI fed variable frequency drive. CO2- U (12)
(ii) State the disadvantages of ac voltage controllers. CO2- U (4)
(iii) Compare VSI and CSI fed Drives. CO2- U (4)

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| 3. | (a) | (i) Draw the schematic of static scherbius drive and explain its operation. | CO3- U | (15) |
| | | (ii) State the disadvantages of rotor resistance control. | CO3- U | (5) |
| Or | | | | |
| | (b) | (i) Explain about power factor consideration in static scherbius drive system. | CO3- U | (12) |
| | | (ii) Analyze equivalent circuit of static static scherbius drive system. | CO3- Ana | (8) |
| 4. | (a) | (i) Explain about DC drive analogy. | CO4- U | (12) |
| | | (ii) Explain direct torque and flux control. | CO4- U | (8) |
| Or | | | | |
| | (b) | (i) Explain the control strategy of DTC | CO4- U | (10) |
| | | (ii) Explain about indirect feed forward vector control | CO4- U | (10) |
| 5. | (a) | (i) Explain about control of load commutated synchronous motor drive. | CO5- U | (12) |
| | | (ii) Explain about Power factor control and V curves of synchronous motor drive | CO5- U | (8) |
| Or | | | | |
| | (b) | (i) Draw and explain the Equivalent circuits of synchronous motor drive. | CO5-U | (12) |
| | | (ii) Explain about speed control of synchronous motor drive. | CO5-U | (8) |
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