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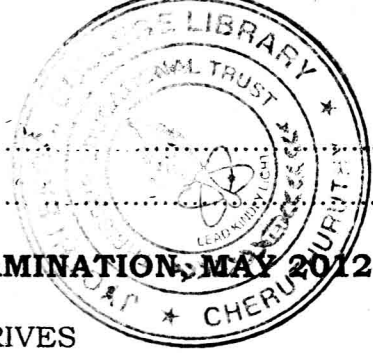Reg. No: ....

SIXTH SEMESTER B.TECH DEGREE EXAMINATION, MAY 2012

EE 09 604 – ELECTRIC DRIVES
(2009 Admissions)

Time : Three Hours   Maximum : 70 Marks

PART- A

1. Draw the block diagram of closed loop modern electric drive system using power electronic converter

2. What do you understand by the term load equalization in electric drives?

3. Sketch also the speed Vs torque characteristics indicating two regions of constant torque mode and constant power mode.

4. State the advantages of variable frequency induction motor drives.

5. What are the differences between salient pole motors and reluctance motors?

(5 x 2 = 10)

PART-B
Answer any FOUR questions.

6. Explain the concept of stability of drive system. Also discuss the stability of drive system using joint speed-torque characteristics.

7. Draw the block diagram and explain the operation of a phase locked loop control system.

8. Discuss the advantages offered by DC chopper drives over line-commutated converter controlled DC drives.

9. Explain the induction motor operation when the V/f ratio is held constant.

10. Explain the various converter configurations for one-phase of an SRM.

11. Brief the salient features of DC and AC traction using PWM-VSI-SCIM drives.

(4 x 5 = 20)

PART- C

12. What do you mean by quadrental diagram? Explain four-quadrant operation of hoist load with neat sketch.

(OR)

13. a) Explain the principle of closed-loop control of dc drive using suitable block diagram.

    b) Discuss briefly the factors involved in energy conservation of electric drives.

Turn Over

14. Draw and explain the power circuit of semi-converter feeding a separately excited dc motor. Explain with typical voltage and current waveforms, the operation in both continuous and discontinuous armature current modes.

(OR)

15. Draw the circuit diagram and explain the operation of chopper fed dc series motor. Also derive the expressions for I_{max} and I_{min} assuming a continuous armature current.

16. Draw a suitable diagram and explain the working of slip-power recovery scheme using commutatorless Kramer drive.

(OR)

17 a) Explain the operation of induction motor by current source inverter.

b) Explain the principle of vector control of induction motor.

18. Explain with a neat diagram the operation of a 3-phase, half-wave brushless dc motor drive with associated waveforms.

(OR)

19. Draw and explain the block diagram of a self-controlled synchronous motor fed from a 3 phase inverter.

$(4 \times 10 = 40)$

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