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Question Paper Code : 40994

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2018

Third Semester

Mechanical Engineering

EE 6351 – ELECTRICAL DRIVES AND CONTROLS

(Common to Manufacturing Engineering/Mechanical and Automation Engineering/

Petrochemical Engineering/Production Engineering/Chemical Engineering/

Petrochemical Technology)

(Regulations 2013)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions.

PART – A

(10×2=20 Marks)

1. Define electric drive.
2. What are the elements of electric drives ?
3. Mention the various types of electrical machines.
4. How slip-ring induction motor is advanced over squirrel cage induction motor ?
5. What is the significance of starter in electrical machine operation ?
6. What are all the protective devices are used in a dc/ac motor starter ?
7. Give the applications of dc drives.
8. What are the advantages of series motor ?
9. Rotor resistance control technique can't be used for cage 1 M – Justify.
10. Compare 120° and 180° inverter mode.



PART - B

(5×13=65 Marks)

11. a) i) What are all the factors influencing the choice of electrical drives? (6)
ii) Explain about the Classes of Motor Duty with a neat diagram. (7)
(OR)
- b) Derive the heating and cooling curves.
12. a) i) Explain the characteristics of dc shunt motors with a neat diagram. (6)
ii) Write the types of electric braking and explain shortly. (7)
(OR)
- b) Explain various electric braking applying in AC induction motor and its characteristics during braking operation.
13. a) i) Give short notes about necessity of a starter for electric motors. (6)
ii) Explain the operation of three point starter and mention its merits and demerits. (7)
(OR)
- b) Brief discuss about the need for starter in an induction motor and its different types.
14. a) Explain about the operation of the Ward Leonard control system with neat sketch.
(OR)
- b) i) Write short notes on DC chopper. (5)
ii) Explain the control of speed control of dc drives. (8)
15. a) Explain the slip recovery scheme in induction motor.
(OR)
- b) What are the speed control methods available to control speed from rotor side?

PART - C

(1×15=15 Marks)

16. a) Explain the closed loop speed control of DC motor in above and below the rated speed with the block diagram. (15)
(OR)
- b) Explain the 4 point starter with diagram. Compare 3 point and 4 point starter. (15)