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**Question Paper Code : P 1282**

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2009.

Third Semester

Mechanical Engineering

EE 1213 — ELECTRICAL DRIVES AND CONTROLS

(Common to Production Engineering)

(Regulation 2004)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the advantages of electrical drives?
2. A motor of smaller rating can be selected for a short term duty. Why?
3. Draw the speed torque characteristics for dynamic braking operation of DC series motor.
4. What is single phasing?
5. Why is starting necessary in an electric motor?
6. Name any four methods used for starting induction motor.
7. Which are the factors that limit the maximum speeds of field controlled DC motors?
8. Mention some of the drawbacks of conventional Ward-Leonard scheme over static Ward-Leonard scheme.
9. Why is stator voltage control suitable for speed control of induction motor in fan and pump drives?
10. Why is a slip power recovery scheme suitable mainly for drives with a low speed range?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Tabulate the merits and demerits of ac and dc drives. (6)  
(ii) What are the main factors which decide the choice of electrical drive for a given application? (10)

Or

- (b) (i) Discuss in brief various standard classes of duty encountered in practice. (10)  
(ii) State and explain the disadvantages of using a motor of wrong rating. (6)
12. (a) Discuss in detail the speed torque characteristics of a separately excited DC motor. (16)

Or

- (b) State and explain the important features of various braking methods for an induction motor. (16)
13. (a) State different types of DC motor starter and explain any one type in detail. (16)

Or

- (b) With a neat sketch, explain the rotor resistance starting of a three phase induction motor. (16)
14. (a) Explain the single phase half-controlled rectifier control of DC separately excited motor. (16)

Or

- (b) Explain the operation of four quadrant DC drives. (16)
15. (a) Explain the principle of operation of variable frequency controls of three phase induction motor. (16)

Or

- (b) Write short notes on :  
(i) Slip power recovery scheme (8)  
(ii) Soft starters. (8)