2006-SKR ENGINEERING COLLEGE

B.E/B.TECH III SEMESTER MODEL EXAM PAPER

ELECTRICAL DRIVE AND CONTROL

ELECTRONICS COMMUNICATION ENGINEERING

JULAY-2006

TIME-3HOUR
MARK-100

PART: A (2×10 = 20)

1.Mention the basic types of electrical drives?

2.What is meant by intermittent loading?

3.What is plugging?

4.Draw the speed-torque characteristics of D.C shunt motor?

5.What is the need of the starter?

6.Name the different starters used in D.C motors?

7.Why is the single-phase induction motor not self starting??

8.Write the speed equation of a dc motor?

9.How is chopper used in speed control of dc motor?

10.Define inverters?

PART: B (5×16 = 80)

11.a) Derive the expression for the heating time constant and draw the heating and cooling curves.

(OR)

b) (i).What factors govern the selection of a motor for a particular application?

. (ii) Explain the loading of an electric motor and its duty cycle with sample diagram.

12.a) (i) Draw the speed torque characteristics of DC motor

(ii) A dc shunt motor drives a centrifugal pump whose torque varies as the square of the speed. The motor is fed from a 200V supply and takes 50A when running at 1000 rpm. What resistance must be inserted in the armature circuit in order to reduce the speed to 800 rpm? The armature and field resistance of the motor are 0.1ohm and 200ohm respectively.

(OR)

b) (i). Explain the conditions to achieve electric regenerative breaking.

(ii) Explain the methods of breaking used in induction motor.

13.a) (i). With the neat sketch draw and explain the 4-point starter along with the protective device.

(ii). Explain any one type of starter used in cage induction motors with the neat sketch.

(OR)

b) (i). Describe ward Leonard speed control.

(ii). Mention its advantages and disadvantages.

14.a)(i) Explain the field control methods used for D.C series motor for speed control?

(ii) A 250V dc series motor takes 40 ampere of current when developing a full load torque at 1500rpm. Its resistance is 0.5 ohm. If the load torque varies as the square of the speed determine the resistance to be connected in series with the armature to reduce the speed to 1200 rpm. Assume that the flux is proportional to the field current.

(OR)

b) Explain clearly with diagrams thyrister control on dc side or chopper control on dc series motor.

15.a) (i). Explain any two-speed control methods employed in dc shunt motor?

(ii) Describe slip power recovery schemes?

(OR)

b) Explain the different methods of solid-state speed control of three-phase induction motor?