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M. TECH.
(SEM-I) THEORY EXAMINATION 2018-19
FUNDAMENTAL OF ELECTRICAL DRIVES

Time: 3 Hours ***Total Marks: 100***

Note: Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 10 = 20

a. Draw the block diagram of electrical drive.
b.What Are The Basic Requirements Of A Braking System
C.What is the factors that influence the choice of electrical drive?
D.Explain the different type of braking of induction motor.
E.Define heating and cooling time constant.
F.Mention the factors affecting the selection of electrical drive.
g. Why copper based dc dives give better performance than rectifier controlled drives?
h. Write the application of DC chopper?
i. What is meant by slip power recovery scheme?
J. State the advantage of group drive.

SECTION B

2. Attempt any *three* of the following: 10 x 3 = 30

a. Discuss the criteria of selection of a drive for a particular operation
b. Discuss the suitability of a specific drive for the following (1) Textile mills (2) sugar mills, (3) paper mills
c. Obtain an expression for short time duty rating of the motor for a given values of the ratio of constant losses to the copper losses at full load .heating time constant and load duration.
The motor rating is to be selected from a class of motors with heating and cooling time constant of the 60 and 90 minutes respectively. Calculate the motor rating for the following duty cycle: 1- Short time periodic duty cycle consisting of 100 KW load for 10 minutes followed by no load period long enough for the motor to cool down (2) Intermittent periodic duty cycle consisting of 100 KW load period for 10 minutes no load period for 10 minutes. Assume loss to be proportional to $(power)^2$
d. Effect of improper selection of motor rating for a job.
e. Explain different type of electrical braking with application.

SECTION C

3. Attempt any *one* part of the following: 10 x 1 = 10

(a) State and explain the functions of the various converters. Also discuss the present status of AC and DC drives.

(b) Define the steady state stability and derive the condition between the load torque and motor torque at equilibrium point.

4. Attempt any *one* part of the following: 10 x 1 = 10

(a) Discuss the constructional features and working of linear induction motor in detail.

(b) Discuss the constructional features and working of two phase servo motor and also draw the equivalent circuit of the motor.

5. Attempt any *one* part of the following: 10 x 1 = 10

(a) Describe the principle of operation of a switch reluctance motor .what are advantage of switch reactance motor over the AC motor.

(b)When operating in regenerative braking, the induction motor slip should not be allowed to exceed the braking slip why?

6. Attempt any *one* part of the following: 10 x 1 = 10

(a) Compare the AC & DC drive. And explain who is better?

(b) Why self excited braking of an induction motor by using capacitor braking is not a recommenced braking.

7. Attempt any *one* part of the following: 10 x 1 = 10

(a) Derive the expression for the equivalent values of drive parameters, are given conditions (1) Load with rotational motion (2) load with Translation motion.

(b) Discuss the Electrical braking and why is better different type of braking system.