Roll No. ....

24421

B. Tech 7th Sem. (EE)
Examination – May, 2018

ELECTRIC DRIVES AND CONTROL

Paper : EE - 403 - F

Time : Three Hours]	[Maximum Marks : 100

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Question No. 1 is *compulsory*. Attempt any *one* question from each section.

1. (a) What are those various factors which need to be considered while choosing an electric drive ? 5

 (b) What is steady state stability ? What is the condition for the system's steady state stability ? 5

 (c) What is the need for keeping v/f ratio constant in ac motors ? 5

 (d) How electric drives can be classified ? 5

SECTION – A

2. (a) Draw block diagram of an electric drive and explain function of each block in detail. 12

 (b) Write application of Electric drive in various fields. 8

3. (a) Why feedback loops are required in an electric drive ? Explain closed loop speed control scheme. 10

 (b) Explain microprocessor based control of electric drive. http://haryanapapers.com 10

SECTION – B

4. (a) Explain multi-quadrant operation of electric drive with the help of suitable example. 10

 (b) Explain thermal model of electric motor with the help of heating and cooling curves. 10

5. What are the various classes of motor duty? Explain them with the help of example and graph. 20

SECTION – C

6. What is chopper fed DC drive ? Explain motoring and breaking mode of operation in detail. 20

7. (a) Draw and explain the block diagram of brushless dc motor drive. Write advantages of brushless dc motor over conventional dc motor.   10

   (b) The speed of 10 kW, 230 V, 1200 rpm separately excited dc motor is controlled by single phase fully controlled bridge converter. The armature resistance is 0.5 ohm and emf constant is 0.182 V /rpm. The single phase ac voltage is 260 V. For firing angle of 30° and armature current of 30 A. find torque, speed and input power factor.   10

SECTION – D

8. (a) What is slip power recovery scheme ? Explain working of static Scherbius drive.   10

   (b) What are the different methods of starting of 3 phase induction motor ? Explain them in brief.   10

9. Explain vector control of 3 phase induction motor. Write advantages of vector control over scalar control methods .   20