

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 2490

Roll No.

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B.Tech.

(SEM. VI) EVEN THEORY EXAMINATION 2012-13

INTRODUCTION TO ELECTRIC DRIVES

Time : 2 Hours

Total Marks : 50

Note :- This paper contains five questions. Attempt all questions.

1. Attempt any two parts : (5×2=10)
 - (a) Explain the construction and principle of operation of a thyristor.
 - (b) What are the characteristics of a thyristor during turn ON and turn OFF ? Explain the gate recovery and reverse recovery.
 - (c) What are the various types of gate triggering circuits ? Explain.
2. Attempt any two parts : (5×2=10)
 - (a) Explain the circuit and waveforms of a 3-phase fully controlled rectifier with a firing angle of 30° .
 - (b) What are the two main configurations of a 3-phase bridge inverter ? Explain the operation of a 120° mode 3-phase inverter.
 - (c) Explain the terms (i) Input power factor and (ii) Total harmonic distortion with reference to a two pulse converter.

3. Attempt any two parts : (5×2=10)
- (a) Derive the equation for the output voltage of a step up chopper.
 - (b) Explain the operation of a single phase to single phase cycloconverter.
 - (c) With a neat diagram, explain the operation of a Jones Chopper.
4. Attempt any two parts : (5×2=10)
- (a) What are the various Braking methods of a DC motor ? Explain.
 - (b) Does the armature current change in the armature speed control method in DC motor ? Explain.
 - (c) Write a short note of DC Chopper Drives.
5. Attempt any two parts : (5×2=10)
- (a) Draw the torque-slip characteristic of a 3-phase Induction motor. How does the shape of the characteristic change in stator voltage control ? Explain.
 - (b) Explain the slip power recovery scheme of a 3-phase Induction Motor.
 - (c) Write a short note on synchronous motor drives.