

Question Bank (G scheme)

Name of subject: Industrial Drives

Subject code: 17667

Semester: IE6G

Unit Test: I

Course: INDUSTRIAL ELECTRONICS

CHAPTER1: FUNDAMENTALS OF DRIVES (16 marks)

3 marks

- 1) State the selection criteria of drives.
- 2) Mention the need of adjustable speed drives.
- 3) Give six advantages of electric motor as prime drives.

4 marks

- 4) State Classification of Drives.
- 5) Explain four quadrant operations of drives.
- 6) Compare AC & DC drives.
- 7) Explain construction of DC motor
- 8) Explain the Block diagram of basic elements of drives.
- 9) What is braking of electric motors? What are the types of braking? Explain any one.

CHAPTER2: CHOPPER CONTROLLED DC Drives(12 marks)

3 marks

- 10) Classify chopper considering their quadrant operation.
- 11) Draw neat diagram of multiphase chopper drive. State its application.
- 12) Draw the three Characteristics of dc series motor with their relations.

4 marks

- 13) With neat diagram & waveforms, explain operation of D.C. chopper using power MOSFET.
- 14) Explain Class E chopper.
- 15) Draw the three Characteristics of dc series motor with their relations.
- 16) Draw Class D controlled chopper drives with neat waveforms.

CHAPTER3: SCR CONTROLLED DC Drives (16 marks)

3 marks

- 17) Draw circuit diagram of three phase semi – converter drive. State its armature voltage equation.
- 18) Draw the circuit diagram of single phase half converter drive & state the equation for armature voltage.
- 19) List the advantages of converter controlled drives.

4 marks

- 20) Draw the circuit diagram of three phase dual converter drive & explain its operation.
- 21) Draw the circuit diagram & waveforms of single phase full converter drive.
- 22) Comparison between single phase & three phase controlled drives
- 23) Explain the importance of phase failure protection in three phase drives.
- 24) Explain three phase half wave converter drive & state the equation for armature voltage.
- 25) Explain Class C controlled chopper drive with neat waveforms.
- 26) A separately excited dc motor is fed from a 230 V,50 Hz supply via a 1 ϕ , half controlled bridge rectifier. Armature parameters are: $L=0.06$ H, $R=0.3\Omega$, $K_a = 0.9$ V/A rad/s & $R_f= 104 \Omega$. The field current is also controlled by a semiconverter& is set to a maximum possible value. $T_L= 50$ N-m at 800 rpm. The inductances of the armatures & field circuits are sufficient enough to make the armature & field currents continuous & ripple free. Compute
 - (a) field current I_f ,
 - (b) Firing angle of the converter in the armature circuit