

**B.TECH. SEM -VII ELECTRICAL 2014 COURSE (CBCS) : WINTER
- 2017**

SUBJECT: AC-DC DRIVES

Day: **Friday**
Date: **12/01/2018**

W-2017-2284

Time: **02.30 PM TO 05.30 PM**
Max Marks: **60**

N.B.:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Assume suitable data if necessary.

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- Q.1** a) What are advantages of electrical drives? (05)
b) What is the role of power modulator in electrical drives? (05)

OR

- a) How do you define active and passive load torques? (05)
- b) What do you mean by steady state stability? (05)

- Q.2** a) What are different drawbacks of plugging? (05)
b) Explain rheostatic type braking with diagram. (05)

OR

- a) Discuss advantages of regenerative braking over other types of braking. (05)
- b) Compare electrical braking with mechanical braking. (05)

- Q.3** a) A 200V, 960 rpm, 12.8A, separately excited DC Motor has armature resistance and inductance of 4Ω and 100 mH respectively. It is fed from 1 ph full controlled rectifier with AC source of 230V, 50 Hz. Calculate motor torque for $\alpha = 60^\circ$ and speed of 1000 rpm. (05)
b) What do you mean by continuous conduction mode? (05)

OR

- a) Explain chopper controlled speed control of DC series motor. (05)
- b) Draw and explain 3ph fully controlled converter. (05)

- Q.4** a) How v/f ratio is decided. Why it is preferred in Induction motors? (05)
b) Compare variable frequency control with stator voltage control. (05)

OR

- a) Discuss advantages and disadvantages of VSI over CSI of Induction motor. (05)
- b) A 3ph, 440V, 50Hz, 6 pole, 925 rpm star connected Induction Motor has $r_1 = 0.2\Omega$, $r_2^1 = 0.3\Omega$, $x_1 = 0.5\Omega$, $x_2^1 = 1\Omega$. Motor is fed from VSI with constant v/f ratio. Calculate maximum torque and speed for 50 Hz. (05)

- Q.5** a) What are energy saving methods for induction motor drive? (05)
b) Explain heating and cooling phenomenon in case of Electric drives. (05)

OR

- a) Explain the term derating of motor. (05)
- b) How do you explain effect of harmonic current in case of drives? (05)

- Q.6** a) What is commutator less DC motor? (05)
b) Write a note on latest trends in drives. (05)

OR

- a) What are servo drives? Enlist its applications. (05)
- b) Explain 4-quadrant operation of rolling mills. (05)