

B.Tech. SEM -VII Electrical 2014 Course (CBCS) : WINTER - 2018

SUBJECT: AC-DC DRIVES

Day: Friday
Date: 23/11/2018

W-2018-2544

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

N.B.

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

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- Q.1**
- a) What are the different properties of electrical drives? (05)
 - b) Draw block diagram of electrical drives & explain each block in brief. (05)
- OR
- a) Write a note on steady state stability. Give example. (05)
 - b) How do you differentiate between active and passive load torques? (05)
- Q.2**
- a) What precaution that need to be taken in case of plugging? (05)
 - b) What are the advantages of DC dynamic braking over other types of braking? (05)
- OR
- a) How do you compare regenerative braking with other braking types? (05)
 - b) What are the advantages of electric braking? (05)
- Q.3**
- a) A 230 V, 1000 rpm, 13 A, separately excited DC motor has armature resistance and inductance of 4 Ω and 100 mH respectively. It is fed from 1 phase full controlled rectifier with AC source of 230 V, 50 Hz. Calculate motor torque for $\alpha = 60^\circ$ & speed of 1000 rpm. (05)
 - b) Draw and explain 3 ph fully controlled converter. (05)
- OR
- a) Explain chopper controlled speed control of DC series motor. (05)
 - b) Write a note on continuous conduction mode with necessary diagram. (05)
- Q.4**
- a) A 3 phase, 415 V, 50 Hz, 6 pole, 925 rpm star connected Induction motor has $r_1 = 0.2 \Omega$, $r_2' = 0.3 \Omega$, $x_1 = 0.5 \Omega$, $x_2' = 1 \Omega$. Motor is fed from VSI with constant v/f ratio. Calculate maximum torque and speed for 50 Hz. (05)
 - b) Differentiate between CSI and VSI with examples. (05)
- OR
- a) Write a note on multilevel inverter. (05)
 - b) Draw and explain thyristorized stator voltage control. (05)
- Q.5**
- a) Explain what do you mean by derating of motor? (05)
 - b) Discuss various energy saving techniques in induction motor drives. (05)
- OR
- a) Write down steps involved in selection of motor power capacity. (05)
 - b) What do you mean by short time rating? (05)
- Q.6**
- a) Explain latest trends in drives and its evolution. (05)
 - b) Explain with sketch about servo drives and its applications. (05)
- OR
- a) Write a note on centrifuged drive. (05)
 - b) Explain four quadrant operation for the drives in rolling mills. (05)

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