

Day: Thursday
Date: 09/05/2019

S-2019-2809

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) Write a note on load equalization. (05)
 - b) What is the selection criterion of drives for certain application? (05)
- OR**
- a) What are the advantages of electrical drives over other types? (05)
 - b) What are the different components of electrical drives? (05)
- Q.2**
- a) Draw and explain about rheostatic braking. (05)
 - b) Write a note on regenerative braking. (05)
- OR**
- a) Discuss drawback of plugging in case of 3 phase induction motor. (05)
 - b) Why DC dynamic braking is advantageous as compared with other braking types? (05)
- Q.3**
- a) A 200 V, 875 rpm, 150 A separately excited DC motor has an armature resistance of 0.06 Ω . It is fed from 1 phase fully controlled rectifier with an AC source voltage of 220 V, 50 Hz. Assuming continuous conduction, calculate firing angle for rated torque and 750 rpm. (05)
 - b) Explain with necessary sketch the closed loop speed control below and above the base speed. (05)
- OR**
- a) Explain chopper control of DC series motor with motoring and regenerative braking action. (05)
 - b) What do you mean by continuous conduction mode? (05)
- Q.4**
- a) Explain why CSI fed induction motor drive is operated at constant rated flux? (05)
 - b) What are the advantages of static rotor resistance control over conventional methods of rotor resistance control? (05)
- OR**
- a) What are relative merits and demerits of VSI & CSI of induction motor? (05)
 - b) Explain why variable frequency control of induction motor is more efficient than stator voltage control? (05)
- Q.5**
- a) Constant speed drive has duty cycle: (i) load rising from 0 to 400 kW in 5 min. (ii) Uniform load of 500 kW for 5 min. (iii) Remains idle for 2 min. Estimate power rating of the motor of using a motor of wrong rating. (05)
 - b) State and explain disadvantages of using a motor wrong rating. (05)
- OR**
- a) What are the energy saving methods for induction motor drive? (05)
 - b) Explain why a motor of small rating is selected for short time duty? (05)
- Q.6**
- a) Describe an efficient unipolar drive for stepper motors. (05)
 - b) Explain centrifugal drive in case of sugar mills. (05)
- OR**
- a) Explain what type of drives are required in machine tool applications? (05)
 - b) Explain four quadrant operation of drives used for rolling mills. (05)