



CBGS SCHEME

USN

--	--	--	--	--	--	--	--	--	--

17EE82

Eighth Semester B.E. Degree Examination, June/July 2024 Industrial Drives and Applications

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. What is electrical drive? Explain classifications, advantages and disadvantages. (10 Marks)
- b. Write applications of electrical drive. (05 Marks)
- c. List the factors to be considered for selection of electrical drives. (05 Marks)

OR

- 2 a. Derive the equivalent values of drive parameters (equivalent of moment of inertia and equivalent torque) which are referred to motor shaft side. (12 Marks)
- b. Derive the equations for time and energy loss in transient operation of electrical drive. (08 Marks)

Module-2

- 3 a. Derive the equations for thermal model of motor for heating and cooling. (12 Marks)
- b. Explain how to determine the motor rating for fluctuating and intermittent loads. (08 Marks)

OR

- 4 a. Explain the operation of single phase fully controlled rectifier fed DC separately excited motor. (12 Marks)
- b. A 200 V, 10.5A, 2000 rpm shunt motor has the armature and field resistances of 0.5 Ω and 40 Ω respectively. It drives a load torque of constant which is rated torque. Calculate the motor speed if the source voltage drops to 175 V. (08 Marks)

Module-3

- 5 a. Explain the operation of 3 phase induction motor supplied with unbalanced source voltage. (11 Marks)
- b. Explain the effect of supply harmonics, power factor and ripple in current on three phase induction motor. (09 Marks)

OR

- 6 a. Explain about various starting methods used for starting of 3 phase induction motor. (10 Marks)
- b. Explain various braking methods used for three phase induction motor. (10 Marks)

Module-4

- 7 a. Explain about operation of three phase induction motor using Voltage Source Inverter (VSI) controller. (12 Marks)
- b. Explain closed loop speed control of three phase induction motor with the help of neat block diagram. (08 Marks)

OR

- 8 a. Explain the control of three phase induction motor using current source inverter. (12 Marks)
b. Explain about various starting methods used for 3 phase synchronous motor. (08 Marks)

Module-5

- 9 a. Explain about self controlled synchronous motor drive using load commutated thyristor inverter. (12 Marks)
b. Explain about operation of brushless DC motor with the help of neat diagrams. (08 Marks)

OR

- 10 a. Explain about working principle and operation of different types of stepper motors. (12 Marks)
b. Explain about important features of stepper motors and torque versus stepping rate characteristics. (08 Marks)

* * * * *