MAR ATHANASIUS COLLEGE OF ENGINEERING, KOTHAMANGALAM

(Government Aided Autonomous Institution)

DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

Second Sessional Examination October 2026

EET413: ELECTRIC DRIVES

S7 EEE

Max. Marks :40 Time : 1 hr 30 min

Answer all questions

PART A (3 x 4=12 Marks)

1. Describe the motoring operation of DC chopper drives. (3Marks) [CO3]
2. Examine the working of class-C chopper fed DC motor. (3Marks) [CO3]
3. List out the methods employed for the speed control of Induction Motor and explain any one method. (3Marks) [CO4]
4. Describe the static rotor resistance control technique for the speed control of a 3-phase induction motor. (3Marks) [CO4]

PART B (2 x 14=28 Marks)

5. a) Analyze the operation of four-quadrant chopper fed DC drives. (10Marks) [CO3]

   b) The chopper used for on-off control of a separately-excited dc motor has supply voltage of 230V dc, an on time of 10 msec and off-time of 15 msec. Neglecting armature inductance and assuming continuous conduction of motor current, calculate the average load current when the motor speed is 1500 rpm and has a motor constant of Km=0.5V/rad per sec. The armature resistance is 3Ω. (4Marks) [CO3]
6. a) Compare stepped wave Voltage Source Inverter fed Induction motor drive with a PWM Voltage Source Inverter fed induction motor drive. Also draw and explain various schemes of Voltage Source Inverter for the speed control of induction motors. (8Marks) [CO4]

   b) Illustrate the V/f control of an induction motor and draw its speed torque Characteristics. (6Marks) [CO4]

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Students will be able to:
CO3: Analyze the operation of chopper-fed DC motor drive in various quadrants.
CO4: Illustrate the various speed control techniques of induction motors.