

Hall Ticket Number:

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

KAMALA INSTITUTE OF TECHNOLOGY & SCIENCE, SINGAPUR
23EE28PE622

III.B. Tech. II. Semester Regular Examinations, April/May- 2026
POWER SEMICONDUCTOR DRIVES
(EEE)

Time: 3 Hours

Max. Marks: 60

Note: Question paper consists of Part-A & Part-B.

i) **Part-A** for 10M, ii) **Part-B** for 50marks

- Part A** is compulsory, consisting of 10 sub questions from all units carrying equal marks.
- Part-B** consists of **10 questions** (numbered from 2 to 11) carrying **10marks** each. From each unit there are 2 questions and the students should answer one of them. Hence the student should answer **5 questions** from **Part-B**.

PART-A (10Marks)			
Q. No	Questions	Marks	BTL
1.a)	Define controlled drives.	1M	1
1.b)	What is continuous current operation?	1M	1
1.c)	Define four quadrant operation.	1M	1
1.d)	What is regenerative braking?	1M	1
1.e)	Define slip in induction motor.	1M	1
1.f)	What is PWM control?	1M	1
1.g)	Define slip power recovery.	1M	1
1.h)	What is static Kramer drive?	1M	1
1.i)	Define synchronous motor drive.	1M	1
1.j)	What is self-control of synchronous motor?	1M	1
PART-B (50Marks)			
Q.No	Questions	Marks	BTL
2. a)	Explain the operation of single-phase fully controlled converter fed DC series motor with waveforms.	5M	2
b)	Derive speed-torque characteristics of converter fed DC separately excited motor.	5M	3
OR			
3. a)	Explain three-phase semi-controlled converter fed DC separately excited motor operation.	5M	2
b)	Analyze output voltage and current waveforms of converter fed DC drives.	5M	4
OR			
4. a)	Explain four quadrant operation of DC motor with neat diagram.	5M	2
b)	Compare plugging, dynamic braking, and regenerative braking.	5M	4
OR			
5. a)	Explain chopper control of DC motor and its classifications.	5M	2
b)	Analyze speed-torque characteristics of chopper fed DC motor.	5M	4

6. a)	Explain variable voltage control of induction motor using AC voltage controllers.	5M	2
b)	Analyze speed–torque characteristics under variable voltage control.	5M	4
OR			
7. a)	Explain V/f control of induction motor using VSI.	5M	2
b)	Compare VSI and CSI based induction motor drives.	5M	4
8. a)	Explain slip power recovery scheme in induction motor.	5M	2
b)	Analyze performance of static Scherbius drive.	5M	4
OR			
9. a)	Explain static Kramer drive with diagram.	5M	2
b)	Discuss advantages and applications of rotor resistance control.	5M	3
10.a)	Explain operation of self-controlled synchronous motor using VSI.	5M	2
b)	Analyze speed–torque characteristics of synchronous motor drives.	5M	4
OR			
11.a)	Explain cyclo-converter fed synchronous motor operation.	5M	2
b)	Discuss PMSM drive and its control methods.	5M	3

—ooOoo—