

R10 Code No: **R32025**

Set No. 1

III B.Tech II Semester Supplementary Examinations, April - 2017 POWER SEMICONDUCTOR DRIVES

(Electrical and Electronics Engineering)			
Time: 3 hours Max. M		ks: 75	
Answer any FIVE Questions			
All Questions carry equal marks			
1	a)	Discuss the speed control of DC motor above its rated speed.	[7M]
	b)	Explain in detail about the various speed control techniques of an induction motor.	[8M]
2	a)	A 200V, 875 rpm, 150A separately excited DC motor has an armature resistance of 0.06 ohm. It is fed from single phase fully controlled rectifier with an AC voltage of 220V, 50Hz. Assuming continuous conduction, calculate 1) Firing angle for rated motor torque and 750 rpm 2) Motor speed for firing angle of 160 degrees and rated torque.	[8M]
	b)	Draw and explain speed torque characteristics of full converter fed separately excited DC motor.	[7M]
3	a)	Explain the speed torque characteristics of three phase semi controlled converter connected to DC series motor.	[8M]
	b)	Derive the speed torque equations for three phase semi controlled converter connected to dc series motor.	[7M]
4		What is four quadrant operation? Explain the closed loop operation of dc motor using block diagram.	[15M]
5	a)	Explain the operation of four quadrant fed separately excited DC motor and dc series motor with necessary waveforms.	[8M]
	b)	Explain the working of step up and step down choppers.	[7M]
6	a)	Explain the control of single phase induction motor using AC voltage controller.	[7M]
	b)	Explain the variable frequency control of an induction motor and explain the speed torque characteristics.	[8M]
7	a)	Explain the speed control and performance characteristics of static Kramer's drive	[8M]
	b)	Describe the static rotor resistance control for speed control of an induction motor.	[7M]
8	a)	What is self controlled mode of synchronous motor?	[5M]
	b)	Explain the modes of variable frequency control of induction motor in detail.	[10M]
