Code No: **R32025** **R10** **Set No. 1**

III B.Tech II Semester Supplementary Examinations, April - 2017
POWER SEMICONDUCTOR DRIVES
(Electrical and Electronics Engineering)

Time: 3 hours **Max. Marks: 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]

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