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Code No: RT31024 (R13) (SET - 1)

III B. Tech I Semester Supplementary Examinations, May -2018 ELECTRICAL MACHINES – III

	Time	(Electrical and Electronics Engineering) : 3 hours Max. Ma	rks: 70
		Note: 1. Question Paper consists of two parts (Part-A and Part-B) 2. Answering the question in Part-A is compulsory 3. Answer any THREE Questions from Part-B	
		PART -A	
1	a) b)	Explain the different methods of starting of a single phase induction motor? Explain in detail about the stator winding in Synchronous generator.	[3M] [3M]
	c)	Explain the effect of armature resistance and leakage reactance on the synchronous generator.	[4M]
	d)	Explain the role of damper winding in synchronous generator.	[4M]
	e)	Explain the principle of operation of Synchronous motor.	[4M]
	f)	What is a synchronous condenser? What are its applications?	[4M]
		PART -B	
2	a)	Explain the principle of operation of a capacitor – start capacitor – run induction motor with suitable diagrams.	[8M]
	b)	Discuss the procedure to determine the parameters of equivalent circuit of a Single – phase induction motor.	[8M]
3	a)	List and explain the salient features of cylindrical – rotor – type synchronous machine	[8M]
	b)	A delta connected three phase 15 KV, 600 rpm, 50 Hz, 4 pole generator has 4 slots per pole per phase. The coil span is 10 slots and there are 20 turns per coil. Determine the flux per pole if the generator has double layer winding.	[8M]
4	a)	Explain the reasons for providing armature winding on the stator and low power field winding on the rotor.	[8M]
	b)	Derive the emf equation of a synchronous generator.	[8M]
5	a)	Explain the conditions that must be fulfilled for parallel operation of two synchronous generators.	[8M]
	b)	A 12 KVA,440 V, 50 Hz, star connected synchronous generator supplies rated load at 0.8 power factor lagging. The armature resistance and synchronous reactance are 0.3 Ω and 8 Ω respectively. Determine the torque angle and the voltage regulation.	[8M]
6	a)	Explain the different methods of starting of synchronous motors.	[8M]
	b)	A 2500 V, three phase star – connected synchronous motor has a resistance of 0.35Ω per phase and synchronous reactance of $2.2~\Omega$ per phase. The motor is operating at 0.75 power factor leading with a line current of 250 A. determine the excitation voltage per phase.	[8M]
7		Write short notes on the following: i)causes of Hunting and its suppression ii) Mathematical analysis of power developed in Synchronous motor	[16M]
