Code No: RT31024 **R13** SET - 1

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

ELECTRICAL MACHINES – III

(Electrical and Electronics Engineering)

Time: 3 hours Max. Marks: 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**

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PART –A

1	a)	Explain the different methods of starting of a single phase induction motor?	[3M]
	b)	Explain in detail about the stator winding in Synchronous generator.	[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 Ω 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]

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