Code No: **R32021** **R10** **Set No. 1**

III B.Tech II Semester Supplementary Examinations, April - 2018

ELECTRICAL MACHINE DESIGN

(Electrical and Electronics Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions
All Questions carry equal marks

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1	a)	Explain the concept of thermal state in electrical machines along with the heating curve	[8M]
	b)	Explain the basic structural parts of an electromagnetic rotating machine	[7M]
2	a)	Explain the importance of equalizer connections in rotating machines	[7M]
	b)	Explain the mmf distribution of concentrated coils in armatures of electrical machines	[8M]
3	a)	What are the factors that affect the size of rotating machines?	[7M]
	b)	Derive the output equation of a dc machine in terms of main dimensions, specific magnetic and electric loadings and speed.	[8M]
4	a)	Explain the term " cross-fluxing" in transformers	[7M]
	b)	Explain the functions of conservator and breather in transformer	[8M]
5	a)	What is Window space factor? Find the width of window for optimum output of a transformer	[8M]
	b)	What types of mechanical forces are developed in transformer windings?	[7M]
6	a)	Explain the functions of stator frame in Induction motor	[7M]
	b)	What is dispersion coefficient? and explain its effect on power factor in three phase induction motor	[8M]
7		Find the main dimensions of a 15 Kw, three phase, 415 V, 50 Hz, 2800 r.p.m. squirrel cage induction motor having an efficiency of 0.85 and a full load power factor of 0.89. Assume: specific magnetic loading = 0.5Wb/m^2; specific electric loading = 25000A/m. Take the rotor peripheral speed as approximately 20 m/s at synchronous speed.	[15M]
8		Write short notes on the following: i)Short circuit ratio ii)Damper windings in synchronous machine iii) output equation of synchronous machine (with design considerations)	[15M]

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