Sanjay Ghodawat University, Kolhapur

Established as State Private University under Govt. of Maharashtra. Act No XL, 2017

2020-21

EXM/P/09/00

Year and Program: 2020-2021 TY BTECH	**School of Technology**	**Department: Electrical**
Course Code: ELE306	**Course Title: Electrical Machine Design**	**Semester : VI**
Day and Date:	**End Semester Examination**	**Time : 2 Hrs.** **Max Marks : 50**

Instructions: 1) All Questions are compulsory.

Q.1		**Answer/Solve the following (any Two)**– *Unit I & II*	**Marks**	Bloom's Level	CO
	a)	What are the different types of enclosures used in electric machines?	8	L2	CO1
	b)	Show that cooling curve of electric machines is exponential in nature, Define Cooling time constant?	8	L2	CO1
	c)	Discuss the factors affecting choice of specific magnetic loading and specific electric loading.	8	L3	CO2
Q.2		**Answer/Solve the following (any two)** – *Unit III & IV*			
	a)	Derive output equation of three phase Induction Motor in terms of its main dimensions.	8	L4	CO2
	b)	Find main dimensions of a 15 KW , 3 phase, 400V, 50 Hz , 2810rpm squirrel cage induction motor having an efficiency of 0.88 & full load power factor of 0.9. Assume: Specific Magnetic Loading=Bav= 0.5Wb/m^2 Specific Electric Loading = ac= 25000 A/m. Take rotor peripheral speed as approximately 20 m/s at synchronous speed.	8	L3	CO2
	c)	Explain types of synchronous machine.	8	L2	CO3
Q.3		**Answer/Solve the following (any two)** – *Unit V & VI*			
	a)	Derive output equation of single phase core type transformer.	9	L4	CO4
	b)	Determine dimensions of core & yoke for a 200 KVA, 50 Hz, 1 phase core type transformer. A cruciform core is used with distance between adjacent limbs equal to 1.6 times width of core laminations. Assume voltage per turn 14 V, maximum flux density 1.1 Wb/m^2,	9	L5	CO4

		window space factor= 0.32, current density 3 A/mm^2 & stacking factor 0.9. The net iron area is 0.56d^2 in a cruciform core, where "d" is diameter of circumscribing circle. Also width of largest stampings is 0.85d.			
	c)	Evaluate No load current derivation of three phase transformer.	9	L6	CO4

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