Sanjay Ghodawat University, Kolhapur
Established as State Private University under Govt. of Maharashtra. Act No XL, 2017
2018-19
EXM/P/09/01

Year and Program:2018-19 FY M.Tech **School of Technology** **Department of Electrical Engineering**

Course Code: ELE505 **Course Title: Modeling & Analysis of Electrical Machines.** **Semester – I**

Day and Date **End Semester Examination (ESE)** **Time:** **Max Marks: 100**

Friday & 21 Dec 2018

Instructions:
1) All questions are compulsory.
2) Assume suitable data wherever necessary.
3) Figures to the right indicate full marks.

		Marks	Bloom's Level	CO
Q.1	**Solve any Two**			
a)	How mutual inductances of armature winding are derived in a induction machine.	07	L_2	CO1
	OR			
a)	Derive the expression for instantaneous speed of DC motor and hence comment on transient behavior of motor for various disturbances.	07	L_2	CO1
b)	Draw and explain representation diagram of a basic two pole machine and primitive machines for DC Shunt motor.	08	L_2	CO2
	OR			
b)	Draw and explain representation diagram of a basic two pole machine and primitive machines for DC Series motor.	08	L_2	CO2
Q.2	**Solve any Two**			
a)	Discuss and derive the transformations for currents between the rotating balanced three phase winding and a stationary two phase (d,q) winding.	07	L_2	CO3
	OR			
a)	Derive the transformations for currents between a rotating balanced three phase winding and (d,q,0) winding.	07	L_3	CO3

	b)	Derive the transformations for currents between a rotating balanced three phase winding and (d,q,) winding.	08	L_3	CO4
		OR			
	b)	Write down the voltage equations of for mathematical model of three phase induction machines and hence obtain an expression for steady state torque?	08	L_3	CO4
Q.3		**Solve any Two**			
	a)	From the basic two pole machines theory develop the voltage and torque equations of primitive machines. (i) Synchronous motor. (ii) Single phase induction motor.	08	L_2	CO1
	b)	Draw and explain representation diagram of a basic two pole machine and primitive machines for DC Compound motor.	08	L_2	CO2
	c)	Explain Park's transformation relating to the three phase currents of a Induction machine to its corresponding d-q axes currents.	08	L_2	CO3
	d)	Discuss modeling of three phase induction motor in rotor reference frame.	08	L_2	CO4
Q.4		**Solve any Two**			
	a)	Explain dynamic performance of induction motor under any one disturbance?	09	L_3	CO5
	b)	Derive voltage and torque equation of Induction machine and explain steady state analysis of induction machine.	09	L_3	CO5
	c)	Write down the generalized model of mathematical model of polyphase induction machines and hence derive steady state equations in phasor form.	09	L_3	CO5
Q.5		**Solve any Two**			
	a)	Explain the transients in Magnetically coupled winding with no leakage.	09	L_3	CO6
	b)	Explain the transients in Magnetically coupled winding with finite	09	L_3	CO6

		leakage.			
	c)	Explain the algorithm for power flow of three phase Transformer for G-Yd Connections.	09	L_3	CO6
Q.6		**Solve any Three**			
	a)	Describe Linearized model of Induction machines	06	L_2	CO5
	b)	Describe Small displacement stability.	06	L_2	CO5
	c)	Explain the algorithm for power flow of three phase Transformer for D-Gy Connections.	06	L_2	CO6
	d)	Explain Symmetrical Components Model of Three Phase Transformers.	06	L_2	CO6

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