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LDRP Institute of Technology & Research, Gandhinagar.

BE Sem-IV (Electrical)

Mid-Sem Examination – February 2015

Electrical Machine-II

Marks- 30 **Date- 28/2/15**

Instructions: **Time: 10:00 am to 11:30am**

1. Figure to right indicate full marks.
2. Assume suitable data wherever it is necessary.
3. Attempt all questions.

Q.1(A)	Derive the torque equation of a three phase induction motor.	(5)
(B)	The useful torque of a 3 phase, 50 Hz, 8 pole IM is 190 N-m. The rotor frequency is 1.5 Hz. Calculate the rotor copper losses if mechanical losses are 700 watts.	(5)
	OR	
(B)	Explain no load and blocked rotor test of IM	(5)
Q.2(A)	Draw lap winding diagram for 4 poles 24 slots with one coil side per slot, single layer showing of motion, direction of induced EMF and position of brushes connection.	(5)
(B)	Explain how rotating magnetic field is produced in 3 phase IM.	(5)
	OR	
Q.2(A)	Write the difference between salient pole rotor and non salient pole rotor of synchronous machine.	(5)
(B)	List the difference between squirrel cage rotor and slip ring rotor of IM.	(5)
Q.3(A)	Write any **two**.	(10)
1.	Explain armature reaction in synchronous machine.	
2.	Explain the effect of variable load with constant excitation in synchronous machine.	
3.	Explain the working principle of synchronous machine	
4.	The full load power input to 4 pole,50 Hz 3phase IM is 50 KW, running at 1440 r.p.m. calculate its full load efficiency if stator losses are 1000 W and frictional losses are 650 W	