Roll No. _____

END SEMESTER EXAMINATION
SEMESTER- V

COURSE CODE :EEE407/EE409 | **DURATION : 3 (THREE)HRS**
COURSE TITLE : ELECTRICAL MACHINE II | **MAXIMUM MARKS : 75**
SESSION : JULY_DEC'21 | **PASS MARKS : 35 %**

NOTE: *1. Attempt any 05 (five) questions.*
2. Mark for each question is shown against it.
3. Assume suitable logical data wherever necessary.

1.	**(a)**	Define synchronous motor.	**(02)**
	(b)	Define V curves and inverted V curves.	**(02)**
	(c)	Explain the various methods of starting synchronous motor.	**(07)**
	(d)	Explain why synchronous motor is not self-starting?	**(04)**
2.	**(a)**	A 4 pole, 3 phase induction motor is supplied from 50 Hz supply. Determine its synchronous speed. On full load, its speed is observed to be 1410 rpm. Calculate its full load slip.	**(04)**
	(b)	A 4 pole, 3 phase, 50 Hz induction motor runs at a speed of 1470 rpm speed. Find the frequency of the induced emf in the rotor under this condition.	**(04)**
	(c)	For a 4 pole, 3 phase, 50 Hz induction motor, the ratio of Stator to rotor turns is 2. On a certain load, its speed is observed to be 1455 rpm when connected to 415 V supply. Calculate; (i) Frequency of rotor emf in running condition. (ii) Magnitude of induced emf in the rotor at standstill. (Assume star connected stator)	**(07)**
3.	**(a)**	List out the difference between the rotor types of induction motor.	**(08)**
	(b)	Draw the slip ring rotor and explain it.	**(07)**
4.	**(a)**	Derive the emf equation of an alternator.	**(05)**
	(b)	Explain the advantages of rotating field system over rotating armature system.	**(05)**
	(c)	Explain crawling and cogging in induction motors.	**(05)**
5.	**(a)**	Define voltage regulation for an alternator?	**(02)**
	(b)	List out the difference between salient pole and non-salient pole type rotors.	**(05)**
	(c)	An armature of 3 phase alternators with 8 poles has 120 slots. Calculate the distribution factor.	**(04)**
	(d)	Can the condition N_S=N exist in induction motor? Why?	**(04)**
6.	**(a)**	List out the advantages and disadvantages of 3 phase induction motor.	**(08)**
	(b)	With neat diagram, explain the construction of induction motor's stator.	**(07)**
7.	**(a)**	A 3Φ, star connected 10 pole, 600 rpm alternator has 90 slots and a flux of 0.16 web per pole. Find the number of armature conductors per phase required to give a line voltage of 11 KV. Assume full pitch coil.	**(05)**
	(b)	Explain in details the different types of windings used in alternators.	**(06)**
	(c)	Explain the concept of synchronous reactance and impedance.	**(04)**

8.	**(a)**	Explain the necessity of a starter in induction motor with citing suitable example.	**(05)**
	(b)	Explain with neat diagram the construction and working of Direct on-line starter.	**(06)**
	(c)	Explain with neat diagram the construction of Autotransformer starter.	**(04)**

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