A **Reg. No. :** | | | | | | | | | | | | |

Question Paper Code: U4301

B.E./B.Tech. DEGREE EXAMINATION, NOV 2023

Fourth Semester

Electrical and Electronics Engineering

21UEE401- ELECTRICAL MACHINES II

(Regulations 2021)

Duration: Three hours | Maximum: 100 Marks

PART A - (10 x 1 = 10 Marks)

1.	What is the highest possible speed by turbo alternators?				CO1-U
	(a) 3000 rpm	(b)1500 rpm	(c)1000 rpm	(d)4000 rpm	
2.	What kind of rotor is most suitable for turbo alternators?				CO1-U
	(a) Salient pole type	(b) Non-salient pole type	(c) both type	(d) none of the above	
3.	Slip ring induction motor has				CO2-U
	(a) Low starting torque		(b)Medium starting torque		
	(c)High starting torque		(d) None of these		
4.	What is the condition for maximum torque				CO2-U
	(a) $R_2 = X_2$	(b) $R_2 = sX_2$	(c) $R_2 = 1/X_2$	(d) $R_2 = X_2^2$	
5.	Which type of starter is used in Pumps and Compressors				CO3-U
	(a) DOL Starter		(b)Star Delta Starter		
	(c)Auto Transformer Starter		(d)All the above		
6.	Static Kramer Slip power Recovery scheme is used for				CO3-U
	(a) Sub Synchronous Speed control		(b) Super Synchronous Speed control		
	(c) Sub and Super Synchronous Speed Control		(d)None of these		
7.	The developed torque of a synchronous motor varies as				CO4-U
	(a) Applied voltage V				
	(b)Inversely proposed to applied voltage				
	(c)Directly proposed to square of applied voltage				

	(d)Inversely proposed to square of applied voltage				
8.	In a synchronous motor, torque or load angle ---------- with increase in load				CO4-U
	(a) Increases	(b) Decreases	(c) Remains unaffected	(d) None of the above	
9.	In a single phase induction motor, the starting torque developed is proportional to				CO5-U
	(a) Square of V	(b) 1/(Square of V)	(c) 1/V	(d) V	
10.	Single phase motors are commercially manufactured up to				CO5-U
	(a) 2HP	(c) 5HP	(c)10HP	(d) 15HP	

PART – B (5 x 2= 10Marks)

11.	Why salient pole construction is not used for high speed Alternators		CO1-U
12.	Explain crawling in three phase Induction motor		CO2-U
13.	State various methods of starting 3 phase Induction motor		CO3-U
14.	List the starting methods of Synchronous motor.		CO4-U
15.	What is meant by Step angle in Stepper motor?		CO5-U

PART – C (5 x 16= 80Marks)

16.	(a)	Explain the emf and mmf methods of determining the voltage regulation of an alternator.	CO1-App	(16)
		Or		
	(b)	Explain the ZPF (Portier) method of determining the regulation of an alternator.	CO1-App	(16)
17.	(a)	Draw and Explain Slip Torque characteristics of induction motor with the effect of changing Rotor resistance.	CO2-App	(16)
		Or		
	(b)	Explain the Equivalent circuit of Induction motor	CO2-Ana	(16)
18.	(a)	Explain in detail about the slip power recovery scheme.	CO3-Ana	(16)
		Or		
	(b)	Explain the speed control of a three phase induction motor using voltage control and frequency control.	CO3-Ana	(16)
19.	(a)	Draw and Explain V-curves and inverted V-curves..	CO4-U	(16)
		Or		
	(b)	Discuss the various starting methods of a synchronous motor.	CO4-U	(16)

20.	(a)	Explain the operating principle of Linear Induction Motor with neat diagram. Mention its Applications	CO5-U	(16)
		Or		
	(b)	Explain the construction and working principle of stepper motor. Mention its Applications	CO5-U	(16)