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Question Paper Code: U4301

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

Fourth Semester

Electrical and Electronics Engineering

21UEE401- ELECTRICAL MACHINES II

(Regulations 2021)

ation: Three hours				Maximu	ım: 100 Ma	rks		
	PART A - (10	x 1 =	10 N	Marks)				
What is the highest possible speed by turbo alternators?					CO1-U			
(a) 3000 rpm	(b)1500 rpm	(c)	(c)1000 rpm		(d)4000 rpm			
What kind of rotor is	most suitable for turb	bo alternators?			CO1-U			
(a) Salient pole type	(b) Non-salient po	ole typ	oe e	(c) both type	(d) none of the above			
Slip ring induction motor has					CO2-U			
(a) Low starting torque			Med	ium starting torq	ue			
(c)High starting torqu	e	(d) None of these						
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		
Which type of starter is used in Pumps and Compressors				CO3-U				
(a) DOL Starter		(b)Star Delta Starter		<u>l</u>				
(c)Auto Transformer	Starter	r (d)All the above						
Static Kramer Slip power Recovery scheme is used for				or		CO3-U		
(a) Sub Synchronous Speed control			(b) Super Synchronous Speed control			ontrol		
(c) Sub and Super Syr	chronous Speed Control			(d)None of these				
The developed torque	veloped torque of a synchronous motor varies as					CO4-U		
(a) Applied voltage V								
(b)Inversely proposed	to applied voltage							
(c)Directly proposed t	to square of applied v	oltage	,					
	What is the highest portion (a) 3000 rpm What kind of rotor is a case of the condition mode (a) Low starting torque (c) High starting torque (c) High starting torque (d) What is the condition (a) R ₂ =X ₂ Which type of starter (c) Auto Transformer Static Kramer Slip portion (a) Sub Synchronous (c) Sub and Super Synthesis (d) Applied voltage V (b) Inversely proposed	What is the highest possible speed by turbo (a) 3000 rpm	What is the highest possible speed by turbo alternation (a) 3000 rpm (b)1500 rpm (c) What kind of rotor is most suitable for turbo alternation (a) Salient pole type (b) Non-salient pole type Slip ring induction motor has (a) Low starting torque (b) (c) High starting torque (d) What is the condition for maximum torque (a) R ₂ =X ₂ (b) R ₂ =sX ₂ (c) Which type of starter is used in Pumps and Comparison (a) DOL Starter (b) (c) Auto Transformer Starter (d) Static Kramer Slip power Recovery scheme is used (a) Sub Synchronous Speed Control The developed torque of a synchronous motor variation (a) Applied voltage V (b) Inversely proposed to applied voltage	$PART A - (10 \times 1 = 10 \text{ M})$ What is the highest possible speed by turbo alternator (a) 3000 rpm (b)1500 rpm (c)1000 What kind of rotor is most suitable for turbo alternator (a) Salient pole type (b) Non-salient pole type Slip ring induction motor has (a) Low starting torque (b)Med (c)High starting torque (d) Non-what is the condition for maximum torque (a) $R_2 = X_2$ (b) $R_2 = sX_2$ (c) $R_2 = sX_2$ Which type of starter is used in Pumps and Compress (a) DOL Starter (b)Starter (c)Auto Transformer Starter (d)All Static Kramer Slip power Recovery scheme is used for (a) Sub Synchronous Speed Control (d) The developed torque of a synchronous motor varies (a) Applied voltage V	PART A - (10 x 1 = 10 Marks) What is the highest possible speed by turbo alternators? (a) 3000 rpm (b)1500 rpm (c)1000 rpm What kind of rotor is most suitable for turbo alternators? (a) Salient pole type (b) Non-salient pole type (c) both type Slip ring induction motor has (a) Low starting torque (b)Medium starting torque (c)High starting torque (d) None of these What is the condition for maximum torque (a) R ₂ =X ₂ (b) R ₂ =sX ₂ (c) R ₂ =1/X ₂ Which type of starter is used in Pumps and Compressors (a) DOL Starter (b)Star Delta Starter (c)Auto Transformer Starter (d)All the above Static Kramer Slip power Recovery scheme is used for (a) Sub Synchronous Speed control (b) Super Synchronous (c) Sub and Super Synchronous Speed Control (d)None of these The developed torque of a synchronous motor varies as (a) Applied voltage V (b)Inversely proposed to applied voltage	PART A - (10 x 1 = 10 Marks) What is the highest possible speed by turbo alternators? (a) 3000 rpm (b)1500 rpm (c)1000 rpm (d)4000 rpm What kind of rotor is most suitable for turbo alternators? (a) Salient pole type (b) Non-salient pole type (c) both type (d) none of these (d) None of these (d) None of these (d) None of these (e)High starting torque (d) None of these (e)High starting torque (d) None of these (e)High starting torque (e) R ₂ =X ₂ (c) R ₂ =1/X ₂ (d) R ₂ =X ₂ (e) Auto Transformer Starter (d)All the above (e) Static Kramer Slip power Recovery scheme is used for (a) Sub Synchronous Speed control (b) Super Synchronous Speed control (c) Sub and Super Synchronous Speed Control (d)None of these (e) Applied voltage V (b)Inversely proposed to applied voltage		

	(d)I	nversely proposed	to square of appl	ied v	roltage				
8.	In a	n a synchronous motor, torque or load angle with increase in load CO4-U							
	(a) I	ncreases	(b) Decreases	(c)	Remains unaffected	(d) None of the			bove
9.	In a single phase induction motor, the starting torque developed is proportional to								CO5-U
	(a) S) 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) 2	2HP	(c) 5HP (c) 10HP (d) 15HP		5HP	ΙP			
	I		PART – B	3 (5 x	x 2= 10Marks)	I.			
11.	. Why salient pole construction is not used for high speed Alternators CO1-U								
12.	Explain crawling in three phase Induction motor CO2-U						CO2-U		
13.	. State various methods of starting 3 phase Induction motor							CO3-U	
14.	List the starting methods of Synchronous motor.						CO4-U		CO4-U
15.	What is meant by Step angle in Stepper motor?						CO5-U		CO5-U
			PART –	- C (5	5 x 16= 80Marks)				
16.	(a) Explain the emf and mmf methods of determining the voltage CO1-Appreciation of an alternator.						App	(16)	
	Or Or								
	(b) Explain the ZPF (Portier) method of determining the regulation of CO1-A an alternator.						App	(16)	
17.	(a) Draw and Explain Slip Torque characteristics of induction motor with the effect of changing Rotor resistance.					otor	CO2-App ((16)
	(b)	Or (b) Explain the Equivalent circuit of Induction motor				CO2-Ana ((16)	
18.	(a)	Explain in detail	n detail about the slip power recovery scheme. Or				CO3-Ana		(16)
							CO3-Ana		(16)
19.	(a)	Draw and Explai	_				CO4-U		(16)
	(b) Discuss the various starting methods of a synchronous motor.				CO4-U	J	(16)		

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