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**Question Paper Code: U4301**

B.E./B.Tech. DEGREE EXAMINATION, APRIL / MAY 2025

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)

- Which of the following represents the pitch factor? CO1-U  
(a)  $\cos \alpha$  (b)  $\cos (2\alpha)$  (c)  $\cos (\alpha/2)$  (d)  $\sin (\alpha/2)$
- 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
- The crawling in the induction motor is caused by CO2-U  
(a) High Loads (b) Low Voltage supply  
(c) Harmonic developed in the motor (d) Improper design of machine
- 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)  $R_2 = X_2^2$
- For large motors, which type of Starter is used? CO3-U  
(a) DOL Starter (b) Auto Transformer Starter  
(c) Star –Delta Starter (d) Rotor Resistance Starter
- 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
- With the increase in the excitation current of synchronous motor the power factor of the motor will CO4-U  
(a) Improve (b) Decrease (c) Remain constant (d) Depend on other factors
- 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. Which of the following motor used in hair dryers? CO5-U  
 (a) Shaded pole IM (b) Split phase IM (c) Cage induction motor (d) PM motor
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. What are the functions of damper winding? CO1-U
12. Explain crawling in three phase Induction motor CO2-U
13. Write about the Slip power Recovery Scheme. CO3-U
14. List the starting methods of Synchronous motor. CO4-U
15. Mention the applications of Linear Induction 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) Explain the construction and working of three phase induction motor CO2-App (16)  
 Or  
 (b) Develop the equivalent circuit of the three phase 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) Explain the operation of synchronous motor at constant load variable excitation. CO4-U (16)  
 Or  
 (b) Explain the construction and Working Principle of 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)

