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**Question Paper Code: 94301**

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2024

Fourth Semester

Electrical and Electronics Engineering

19UEE401 – Electrical Machines - II

(Regulations 2019)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

- Which of the following represents the pitch factor? CO1- R  
(a)  $\cos \alpha$                       (b)  $\cos (2\alpha)$                       (c)  $\cos (\alpha/2)$                       (d)  $\sin (\alpha/2)$
- In alternator, the rotary part is CO1- U  
(a) armature                      (b) Core                      (c) magnetic field poles                      (d) none of these
- For pure resistive load what is the armature reaction? CO2-Ana  
(a) Cross magnetization                      (b) Demagnetization                      (c) Magnetization                      (d) All of the above
- Which of the following method is accurate to give the voltage regulation? CO2-Ana  
(a) MMF method                      (b) Synchronous Impedance method  
(c) Zero power factor method                      (d) None of the above
- With the increase in the excitation current of synchronous motor the power factor of the motor will CO3-Ana  
(a) Improve                      (b) Decrease                      (c) Remain constant                      (d) Depend on other factors
- In a synchronous motor, torque or load angle ----- with increase in load CO3- Ana  
(a) Increases                      (b) Decreases                      (c) Remains unaffected                      (d) None of the above

7. Slip ring induction motor has CO4- App  
 (a) Low starting torque (b) Medium starting torque  
 (c) High starting torque (d) None of these
8. Which type of starter is used in Pumps and Compressors CO5- App  
 (a) DOL Starter (b) Star Delta Starter  
 (c) Auto Transformer Starter (d) All the above
9. In a single phase induction motor, the starting torque developed is proportional to CO5- App  
 (a) supply voltage V (b) Square of V  
 (c)  $1/(\text{Square of } V)$  (d)  $1/V$
10. Single phase motors are commercially manufactured up to CO6- U  
 (a) 1 HP (b) 2HP (c) 5HP (d) 10HP

PART – B (5 x 2= 10 Marks)

11. What are the functions of damper winding? CO1- U
12. Compare salient pole rotor & smooth cylindrical rotor CO2- Ana
13. Why Synchronous motor is not self starting? CO3 -Ana
14. Compare the slip ring rotor and cage rotor of an induction motor. CO4 -App
15. Why Single phase induction motor has low power factor? CO5 -App

PART – C (5 x 16= 80Marks)

16. (a) Describe with neat sketch, the construction of cylindrical rotor of an alternator CO1- U (16)  
 Or  
 (b) Discuss briefly the effect of armature flux on main flux in Alternators for various power factors. CO1- U (16)
17. (a) Discuss the EMF method of predetermining the regulation of an alternator CO2- Ana (16)  
 Or  
 (b) List the condition for parallel operation of 3 phase alternator and Explain any one method of parallel operation of Alternators. CO2- Ana (16)
18. (a) Illustrate the phenomenon of hunting and the use of damper winding with the help of dynamic equations. CO3- U (16)

Or

- (b) Explain the torque equation of synchronous motor. CO3- Ana (16)
19. (a) Explain the various starters used in induction motors. CO4- U (16)  
Or  
(b) Discuss the various speed control schemes of induction motors refer to stator side. CO5- App (16)
20. (a) Explain the principle of operation of repulsion motor. Mention its Applications CO6- U (16)  
Or  
(b) Explain the principle of operation of capacitor run induction motor and capacitor start capacitor run induction motor. CO6- U (16)

