

**ANURAG Engineering College**

(An Autonomous Institution)

II B.Tech II Semester Regular Examinations, June/July – 2024

**ELECTRICAL MACHINES–II****(ELECTRICAL AND ELECTRONICS ENGINEERING)****Time: 3 Hours****Max. Marks: 60****Section – A (Short Answer type questions)****(10 Marks)****Answer All Questions**

	<b>Course Outcome</b>	<b>B.T Level</b>	<b>Marks</b>
1. Derive the expression for rotor frequency in terms of stator frequency	CO1	L1	1M
2. Write the formula for Slip	CO1	L2	1M
3. Explain Torque-Slip Characteristics of Voltage Frequency controlled Induction Motor?	CO2	L2	1M
4. Write Advantages of deep bar rotor	CO2	L2	1M
5. What are the sources of Harmonics in Generated EMF in case of alternator	CO3	L1	1M
6. Define Distribution factor	CO3	L1	1M
7. Define any two main features of Synchronous motor	CO4	L1	1M
8. What is synchronous condenser?	CO4	L1	1M
9. List the applications of shaded pole motor	CO5	L1	1M
10. Write any two applications of single-phase split phase induction motor	CO5	L1	1M

**Section B (Essay Questions)****Answer all questions, each question carries equal marks.****(5 X 10M = 50M)**

11. A) Derive and explain rotating magnetic field in a three-phase induction motor with suitable diagrams.	CO1	L3	10M
<b>OR</b>			
B) A 6 –pole, 50 Hz, three phase induction motor running on full load develops a useful torque of 150 Nm at rotor frequency of 1.5 Hz. Calculate the shaft power output. If the mechanical torque lost in friction be 10 Nm, determine i) rotor copper loss, ii) the input to the motor and iii) the efficiency.	CO1	L3	10M
12. A) Explain the method of speed control of 3-phase induction motor by varying the supply frequency.	CO2	L2	10M
<b>OR</b>			
B) Derive the expressions for starting torque and maximum torque for three phase induction motor	CO2	L3	10M
13. A) Explain the phenomena of armature reaction when an alternator is delivering a load current at i) purely lagging pf, ii) Unity pf and iii) purely leading pf	CO3	L2	10M
<b>OR</b>			
B) Explain the regulation of Salient pole Alternators	CO3	L2	10M
14. A) Explain about variation of current and power factor with excitation of a synchronous motor	CO4	L2	10M
<b>OR</b>			
B) Derive the expression for load sharing between the dissimilar alternators	CO4	L3	10M

15. A) Using double field revolving field theory explain the torque–slip characteristics of a single-phase induction motor and prove that it cannot produce starting torque? CO5 L3 10M
- OR**
- B) Explain the constructional details and principle of operation of a capacitor start induction motor and capacitor start and capacitor run Induction motor CO5 L3 10M