ACE
Engineering College

(An Autonomous Institution)

Question Paper Code: | EE402PC | ACE-R20

Semester End Examination
II B. Tech- II Semester- AUGUST -2022
ELECTRICAL MACHINES-II
ELECTRICAL AND ELECTRONICS ENGINEERING

Time: 3 Hours   Max. Marks: 70

H. T. No

Answer any 5 Questions out of 8 Questions from the following

Q.No	Question	Marks
1. a)	Explain the constructional details of induction motor and list out the features of two types of rotors with neat diagrams	7
b)	Calculate the rotor frequency, rotor reactance, rotor current, rotor power factor at starting and at a slip of 0.04 for a 4 pole, 50 Hz induction motor. The voltage measured across the open terminals of rotor winding is 120V. The rotor resistance is 0.1 Ω and standstill reactance as 1Ω.	7
2. a)	Explain the procedure of drawing the circle diagram of an induction motor. What information can be drawn from the circle diagram	7
b)	A three phase, 400 V, 50 Hz induction motor takes a power input of 35 kW at its full load speed of 980 rpm. The total stator losses are 1 kW and the friction and windage losses are 1.5 kW. Calculate (i) slip (ii) rotor ohmic losses (iii) shaft power (iv) shaft torque and (v) efficiency.	7
3. a)	Derive the expression for distribution factor (K_d).	7
b)	Explain the procedure to find voltage regulation by using ZPFC method and what is the difference between MMF and ZPFC methods	7
4. a)	Draw and explain the phasor diagram of Alternator for lagging power factor load.	7
b)	Explain in detail the effect of different loads on armature reaction in synchronous generator.	7
5. a)	Explain briefly about power flow diagram of induction motor and derive relation between different powers?	7
b)	Explain how to draw 'V' and 'inverted V' curves of synchronous motor.	7
6. a)	Explain the procedure to verify conditions for parallel operation by using dark lamp method.	7
b)	Why synchronous motor is not a self-starting motor?	7
7. a)	Explain the double field revolving theory	7
b)	Explain the construction and working principle of shaded pole motor with neat diagram.	7
8. a)	Explain the effect of change of excitation in alternators.	7
b)	Explain the construction and working principle of permanent magnet motors.	7