

BE Semester- V (Electrical Engineering) Question Bank

(E 501 ELECTRICAL MACHINES – II)

All questions carry equal marks (10 marks)

Q.1	Explain construction and working principle of three-phase induction motor.
Q.2	Explain methods of measurement of slip in three-phase induction motor.
Q.3	Explain torque-slip characteristic of three-phase induction motor.
Q.4	Discuss in details no-load & blocked rotor test of three-phase induction motor.
Q.5	Discuss condition for maximum starting and running torque for three-phase induction motor.
Q.6	Describe analogy of induction motor with transformer in details.
Q.7	State methods of speed control for three-phase induction motor and explain any one of them in details.
Q.8	State starting methods of three-phase induction motor and explain any one of them in details.
Q.9	Explain working of double cage induction motor and its equivalent circuit.
Q.10	Discuss electrical transients and their effects in case of induction machine.
Q.11	Discuss advantages & applications of linear induction motor.
Q.12	Write a detailed note on energy efficient motors.
Q.13	Explain working of induction generator.
Q.14	Explain effect of unbalance voltages & frequency variation on operation of induction motor.
Q.15	Explain constructing steps for circle diagram of three phase induction motor.
Q.16	Discuss the testing of induction motor as per IS.
Q.17	Compare simplex & duplex windings in details.
Q.18	Explain mush winding in details.
Q.19	Explain hemitropic winding in details.
Q.20	Describe fractional slot lap windings.
Q.21	Discuss the functions of dummy coils, split coils and equalizer connections.
Q.22	Explain why single phase induction motor is not self starting and enlist types of single phase motors.
Q.23	Describe double filed revolving theory.
Q.24	Explain working of capacitor start and run induction motor.
Q.25	Explain working of shaded pole induction motor.
Q.26	Explain equivalent circuit of 1-phase induction motor.
Q.27	Discuss working of fractional horse power motors.
Q.28	Explain working principle of split phase induction motor in details.
Q.29	Discuss action of commutator as a frequency converter in details.
Q.30	Compare squirrel cage and slip-ring induction motor performance in details with necessary diagrams.
Q.31	Explain working of repulsion motor with necessary diagrams.
Q.32	Explain working of Schrage motor with necessary diagrams.
Q.33	Explain working of AC series motor with necessary diagrams.
Q.34	Explain working of universal motor with necessary diagrams.
Q.35	A 500V, 6 pole, 50Hz, Three phase Induction motor develops 20kW. When running at 995 rpm the p.f. is 0.87 lagging. Calculate (a) Slip (b) rotor copper loss (c) the total input if stator loss is 1500W (d) Line current (e) the rotor current frequency.
Q.36	A 3000 V, 24 pole, 50Hz, Three phase star connected induction motor has slip ring rotor of resistance 0.016 ohms and standstill reactance 0.265 ohms per phase full load torque is

	<p>obtained at speed of 247 rpm. Calculate (a) the ratio of maximum full load torque (b) the speed at maximum torque. Neglect stator impedance.</p>
Q.37	<p>A 3-phase, 6 poles, 50 Hz, induction motor has full load speed of 960 rpm with its slip rings shorted. The motor drives a constant torque load. If the rotor speed is reduced to (a) 800 rpm (b) 400 rpm by inserting external resistance in rotor circuit, compare the rotor ohmic losses at these two reduced speed with full load</p>
Q.38	<p>A 3 phase induction motor has a starting torque of 150% and maximum torque of 250% of full load torque. Neglect stator resistance and assume constant rotor resistance. Compute (a) Slip at maximum torque (b) Full load slip.</p>
Q.39	<p>A 50 kW, 6-pole, 50, 450 V 3-phase slip ring induction motor furnished the following test figures: No-load test: 450V, 20 A, P.F.=0.15 Blocked rotor test: 200 V, 150 A, P.F.=0.3 The ratio of stator to rotor copper losses on short circuit was 1:1. Draw the circle diagram and determine from it (a) the full-load current and power factor (b) the maximum torque and the maximum power input</p>
Q.40	<p>A 50 kW, 6-pole, 50, 450 V 3-phase slip ring induction motor furnished the following test figures: No-load test: 450V, 20 A, P.F.=0.15 Blocked rotor test: 200 V, 150 A, P.F.=0.3 The ratio of stator to rotor copper losses on short circuit was 1:1. Draw the circle diagram and determine from it (a) slip, rotor copper loss at full load (b) efficiency at full load</p>