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Bengaluru

Mid Term Examinations - October 2026

Date: 06/10/2026 **Time:** 11:45 AM - 01:15 PM

Course Code: EEE2503 **Course Name:** AC Machines

Semester: Fifth Semester **Max. Marks:** 50 **Weightage:** 50%

CO - Levels	CO1	CO2	CO3
Marks	26	40	24

PART A: Answer Following Questions. 10 M

Q.N.	Questions	M	CO	BT
1	Illustrate the equivalent circuit of a transformer under no-load condition.	2	CO1	BT2
2	Determine the maximum core flux of a 400-turn transformer winding connected to a 50Hz supply with an induced EMF of 222 V.	2	CO1	BT3
3	List applications of a three-phase transformer.	2	CO1	BT1
4	Why Single Phase Induction motor is not self starting one? Justify your answer .	2	CO3	BT3
5	Mention the applications of single phase induction motor	2	CO3	BT2

PART B : Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT
6	Describe the following two methods of starters of a three-phase induction motor. (i)Autotransformer starter (5 marks) (ii)Rotor resistance starter (5 marks)	10	CO2	BT2
7	Clearly explain about the following speed control methods. 1.V/f control method.- 5Marks 2.Supply Voltage control method.- 5Marks	10	CO2	BT2

PART C: Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT
8	A load of 500 kVA at 0.8 power factor lagging is to be shared by two three phase transformers A and B of equal ratings. If the equivalent delta impedances as referred to Secondary are (2 + j6) Ω for A and (2 + j5) Ω for B, calculate the load supplied by each transformer.	10	CO1	BT3
9	A balanced 3-phase load of 150 kW at 1000 V, 0.866 lagging power factor is supplied from 2000 V, 3-phase mains through single-phase transformers (assumed to be ideal) connected in (i) delta-delta (ii) star-star. Find the current in the windings of each transformer and the power factor at which they operate in each case.	10	CO1	BT3

PART D: Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT

10	Explain the following with neat sketch 1.Capacitor start Induction motor-5Marks 2.Capacitor run Induction motor-5Marks	10	CO3	BT2
11	Explain the construction and operation of a Shaded pole induction motor.	10	CO3	BT2

PART E: Answer Any 1 Following Questions. 10 M				
Q.N.	**Questions**	**M**	**CO**	**BT**
12	A 4-pole, 3-phase induction motor operates from a supply whose frequency is 50 Hz. Calculate : (i) the speed at which the magnetic field of the stator is rotating. (ii) the speed of the rotor when the slip is 0.04. (iii) the frequency of the rotor currents when the slip is 0.03. (iv) the frequency of the rotor currents at standstill.	10	CO2	BT3
13	A 746-kW, 3-phase, 50-Hz, 16-pole induction motor has a rotor impedance of (0.02 + j 0.15) W at standstill. Full-load torque is obtained at 360 rpm. Calculate (i) the ratio of maximum to full-load torque (ii) the speed of maximum torque and (iii) the rotor resistance to be added to get maximum starting torque	10	CO2	BT3