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Bengaluru

Mid Term Examinations - October 2026

Date: 09/10/2026 **Time:** 02:00 PM - 03:30 PM

Course Code: EEE1200 **Course Name:** Basics of Electrical and Electronics Engineering

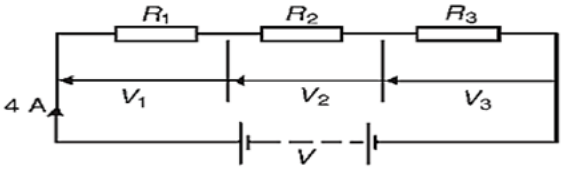
Semester: First Semester **Max. Marks:** 50 **Weightage:** 50%

CO - Levels	CO1	CO2	CO3
Marks	22	24	44

PART A: Answer Following Questions. 10 M

Q.N.	Questions	M	CO	BT
1	Two resistors of 4 Ω and 6 Ω are connected in series across a 20 V supply. Calculate the voltage across each resistor using voltage division rule.	2	CO1	BT2
2	State the rule used to determine the direction of the induced EMF in the conductor of a generator.	2	CO2	BT2
3	Compare statically induced emf and dynamic induced emf	2	CO2	BT2
4	A supply voltage has an average value of 125 V. Determine its maximum value and its rms value.	2	CO3	BT3
5	Compare star connected and delta connected three phase AC supply in terms of their voltage and current relationship.	2	CO3	BT2

PART B : Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT
6	Given four 4 Ω resistors, state how they must be connected to give an overall resistance of: (a) 4 Ω, (b) 1 Ω (c) 16 Ω (d) 10 Ω, all four resistors are to be connected in each case.	10	CO1	BT3
7	For the circuit shown in Figure, determine (a) the battery voltage V, (b) the total resistance of the circuit, and (c) the values of resistance of resistors R1, R2 and R3, given that the potential differences across R1, R2 and R3 are 5 V, 2 V and 6 V respectively.(6Marks)  (b).Three resistors of 3 Ω each are connected in a star configuration. Calculate the equivalent resistance of each branch when the network is converted into an equivalent delta configuration.(4Marks)	10	CO1	BT3

PART C: Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT

8	(a).A coil used in a DC electromagnet has 600 turns and resistance 30 Ω. When connected to a 180 V supply, the flux produced is 0.003 Wb. Calculate the self-inductance of the coil. (5Marks). (b).Derive the expression for coefficient of coupling between two coils. (5Marks)	10	CO2	BT2
9	(a).Two identical coils X and Y of 1,200 turns each lie in parallel planes such that 90% of flux produced by one coil links with the other. If a current of 5 A flowing in X produces a flux of 0.5 mWb in it, find the mutual inductance between X and Y.(5Marks) (b).Explain about different types of Inductance in electric circuit with example.(5Marks)	10	CO2	BT2

PART D: Answer Any 1 Following Questions. 10 M				
Q.N.	**Questions**	**M**	**CO**	**BT**
10	(a).A circuit consists of a resistance of 20Ω, an inductance of 0.05H connected in series. A supply of 230V at 50Hz is applied across the circuit. Find the current, power factor and power consumed by the circuit.(5Marks). (b).A coil takes a current of 2 A from a 12 V d.c. supply. When connected to a 240 V, 50 Hz supply the current is 20 A.Calculate the resistance, impedance, inductive reactance and inductance of the coil.(5Marks)	10	CO3	BT3
11	(a).The equation for an alternating current is given by i=28.28sin(314t+30°) A . Find its rms value, frequency, and phase angle.(4Marks). (b).In a series circuit containing pure resistance and a pure inductance, the current and the voltage is expressed as $i(t)=5sin(314t+2\pi/3)A$ and $e(t)=15(sin314t+5\pi/6)V$. Find (a) What is the impedance of the circuit. (b) What is the value of the resistance. (c) What is the inductance. (d) What is the average power drawn by the circuit. (e) What is the power factor? (6Marks)	10	CO3	BT3

PART E: Answer Any 1 Following Questions. 10 M				
Q.N.	**Questions**	**M**	**CO**	**BT**
12	A 400V, 3-ϕ supply is connected across a balanced load of three impedances each consisting of a 34Ω resistance and 26Ω inductive reactance in series. Determine the current drawn from the power mains if the three impedances are (a) Y-connected, (b) Δ-connected. Also calculate power factor and power consumed. by the system.	10	CO3	BT3
13	A pure inductance of 1.273 mH is connected in series with a pure resistance of 30 ohm. If the frequency of the sinusoidal supply is 5 kHz and the potential drop across the 30 ohm resistor is 6 V, determine the value of the supply voltage and the voltage across the 1.273 mH inductance. Draw the phasor diagram.	10	CO3	BT3