Sri Siddhartha Institute of Technology, Tumkur

(A constituent college of Sri Siddhartha Academy of Higher Education,Tumkur)

22EE102: BASIC ELECTRICAL ENGINEERING

Date: 06/11/23 **TEST 1** Time: 60 min Max Marks: 30

Q.No		Marks	CO	BL
1.	Define R.M.S value and deduce the relation between R.M.S value and Max Value.	6	1	1,3
2.	Examine whether the current in pure inductor lags the applied voltage by 90°.	6	1	3
3.	Demonstrate that the average power in pure inductor is zero.	6	1	3
4.	A pure inductance of 300mH is connected in series with a pure resistance of 100 Ω. The circuit is supplied from 250V, 50Hz source. Evaluate the power factor and power consumed in the circuit.	6	1	3,4
5.	List the advantages of three phase system over single phase system	6	2	2

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Date: 11/12/23 **CIE-2** Max Marks: 30 Time: 60 min

Q.No		Marks	CO	BL
1.	A balanced star connected load of (8 + j6) Ω per phase are connected to a three phase 400 V supply. Evaluate the line current, power factor, power, reactive volt ampere.	6	2	3
2.	Examine whether, two wattmeter are sufficient to measure three phase power. using star connection	6	2	3
3.	Three similar choke coils each having resistance 10Ω and reactance 10Ω are connected in star across a 440 V, three phase supply. Evaluate the current and the reading of each of two wattmeters connected to measure power.	6	2	3,4
4.	With a neat sketch explain pipe earthing	6	3	2
5.	Derive EMF equation of transformer.	6	4	3

Common for sections: H,I, J,K, L, M, N

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Date:04/01/24 **CIE3** Max Marks: 20 Time: 60 min

Q.No		Marks	CO	BL
1.	With neat sketch, explain the construction of DC machine.	8	4	2
2.	Derive an expression for armature torque of DC motor.	6	4	3
3.	A 250KVA, 11000/415 V, 50Hz single phase transformer has 80 turns on the secondary. Evaluate i) rated primary and secondary currents ii) number of primary turns iii) maximum value of flux.	6	4	4

Common for sections: H,I, J,K, L, M, N

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
Accredited by NBA, New Delhi in Tier 1 for 3 years (2023-2026)

22EE202: BASIC ELECTRICAL ENGINEERING

Max. Marks: 30 ***CIE-I*** ***Duration: 60***
Date: 01.04.2024

Answer all the questions:

Q. No.	Questions	M	CO	BL	PO
1	Define i) Real Power ii) Apparent Power iii) Reactive Power.	06	01	01	01
2	With the help of circuit diagram and phasor diagram, discuss the behavior of R-C series circuit.	06	01	02	01
3	A parallel circuit comprises of a resistor of 10Ω in series with an inductor of 0.12H in one branch and a resistor of 20Ω in series with a capacitor of 40μF in another branch connected across 200V, 50Hz supply. Evaluate i) current in each branch ii) supply current iii) total power. Sketch the phasor diagram.	06	01	04	02
4	A non- inductive resistor of 10Ω is in series with a capacitor of 100μF across a 250V, 50Hz AC supply. Evaluate the current taken by the capacitor and power factor of the circuit.	06	01	04	02
5	Develop the relationship between line and phase values of current and voltage in a three phase balanced star connected system.	06	02	02	0

Legend:
M – Marks, CO – Course Outcome, BL – Bloom's Level, PO – Program Outcome, PSO – Program Specific O

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22EE202: BASIC ELECTRICAL ENGINEERING

CIE-3 ***Max. Marks: 20*** ***Duration: 60 minutes*** ***Date: 03.06.2024***

Answer all the questions:

Q. No.	Questions	M	CO	BL	PO
1.	Explain the construction of DC machine with a neat sketch.	08	04	02	01
2.	Explain the various losses in a transformer.	06	03	02	01
3.	A 200V DC series motor is taking a current of 40A. Resistance of armature is 0.5Ω and resistance of series field is 0.25Ω. Evaluate the back emf.	06	04	04	02

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B.E., SEMESTER END EXAMINATION JAN - FEB 2024

22EE102 : BASIC ELECTRICAL ENGINEERING

TIME: 3.00 Hrs **SEM: I** **MAX MARKS: 100**

NOTE: Answer any five full questions selecting one full question from each choice.

		M	CO	BL
1.a)	Discuss Average value of an alternating quantity and derive the relation with maximum value.	6	1	3
b)	Examine whether the current in pure capacitor leads the applied voltage by 90°.	7	1	3
c)	Two impedances $Z_1 = (10+j15)\ \Omega$ and $Z_2 = (5 - j8)\ \Omega$ are connected in parallel across a voltage source. If the total current drawn is 10 A, evaluate the currents in Z_1 and Z_2 and power factor of the circuit.	7	1	3
	OR			
2.a)	Sketch the sinusoidal alternating current waveform and define the following terms (i) instantaneous value(ii) amplitude (iii) cycle(iv) time period (v) frequency.	6	1	2
b)	Examine whether the current in pure capacitor leads the applied voltage by 90°.	7	1	3
c)	An e.m.f whose instantaneous value is $100 \sin(314t - \pi/4)$ volts is applied to a circuit and the current through it is $20 \sin(314t - \pi/2)$ Amperes. Evaluate the frequency and the values of circuit elements, assuming a series combination.	7	1	4
3.a)	Develop the relationship between line and phase values of current in a three phase balanced star connected system.	6	2	3
b)	With the help of a neat sketch and truth table explain two and three way control of lamp.	8	3	2
c)	A star connected inductive load takes 8 kW at 0.8 pf lag, when connected to 460 V, 3-phase supply. Calculate the readings of two wattmeter to measure power.	6	2	3
	OR			
4.a)	Develop the relationship between line and phase values of current in a three phase balanced star connected system.	7	2	
b)	Two wattmeter are used to measure power consumed in a delta connected load. Each branch of load is having impedances of 20Ω at an angle 60^0. Supply voltage is 400V. Calculate the power and readings of individual wattmeter.	7	2	
c)	With the help of a neat sketch, explain pipe earthing.	6	3	
5.a)	Explain the various losses in a transformer.	6	2	
b)	A 250 kVA, 11000/415 V, 50Hz single phase transformer has 80 turns on the secondary. Evaluate (i) rated primary and secondary currents(ii) number of primary turns (iii) maximum value of flux.	6	4	