Subject name: CIRCUIT & NETWORK THEORY , 25.10.2022 TO 31.01.2023
Faculty: BASUDEV BARICK
No of days per week: 5

Course Code : **Th-2**
Theory : 5 P/W
Total Period s: 75 P/ Sem
Examination : 3 Hours
Sem : 3_{RD} EE

Class Test : 20 Marks
End Semester Exam : 80 Marks
TOTAL MARKS : 100 Marks

WEEK	PERIOD	TOPIC
1st	1_{st}	Voltage, current, power and energy
	2_{nd}	Resistance, Inductance & capacitance as parameters
	3_{rd}	Active, Passive, Unilateral & bilateral, Linear & Non linear elements.
	4_{th}	KVL and KCL, Voltage division & current division.
	5_{th}	Problems related to above topics.
2_{nd}	1_{st}	Introduction to Magnetic Circuits Magnetizing force, Intensity.
	2_{nd}	MMF, flux and their relations. Permeability, reluctance and permeance.
	3_{rd}	Analogy between electric and Magnetic Circuits
	4_{th}	B-H Curve
	5_{th}	Series & parallel magnetic circuit
3_{rd}	1_{st}	Hysteresis loop
	2_{nd}	Mesh Analysis Mesh Equations by inspection
	3_{rd}	Super mesh Analysis Problems related to Mesh analysis
	4_{th}	Nodal Analysis Nodal Equations by inspection
	5_{th}	Super node Analysis Source Transformation Technique
4_{th}	1_{st}	Problems related to Node analysis & Source transformation.
	2_{nd}	Star – delta transformation & related problems.
	3_{rd}	Super position Theorem & related problems
	4_{th}	Thevenin's Theorem & related problems
	5_{th}	Norton's Theorem & related problems
5_{th}	1_{st}	Reciprocity Theorem & related problems
	2_{nd}	Compensation Theorem & related problems
	3_{rd}	Maximum power Transfer theorem & related problems
	4_{th}	Problems related to Thevenin's, Norton's, Maximum power Transfer theorem.

	5th	Milliman's Theorem & related problems.
6th	1st	Review of A.C. through R-L series Circuit. Solution of problems of A.C. through R-L series Circuit by complex algebra method.
	2nd	Review of A.C. through R-C series Circuit. Solution of problems of A.C. through R-C series Circuit by complex algebra method.
	3rd	Review of A.C. through R-L-C series Circuit. Solution of problems of A.C. through R-L-C series Circuit by complex algebra method.
	4th	Solution of problems of A.C. through R-L, R-C parallel Circuits
	5th	Solution of problems of A.C. through R-L-C parallel &Composite Circuits
7th	1st	Power factor & power triangle.
	2nd	Deduce expression for active, reactive, apparent power.
	3rd	Series resonance & band width in RLC Circuit
	4th	Q factor & selectivity in series circuit.
	5th	Problems related to Series Resonance.
8th	1st	Resonant frequency for a tank circuit.
	2nd	Poly phase Circuit
	3rd	Voltage, current & power in star connection & related problems
	4th	Voltage, current & power in delta connection & related problems
	5th	Three phase balanced circuit.
9th	1st	Self Inductance
	2nd	Mutual Inductance
	3rd	Conductively coupled circuit and mutual impedance
	4th	Dot convention Coefficient of coupling
	5th	Series and parallel connection of coupled inductors.
10th	1st	Problems related to above topics.
	2nd	Steady state & transient state response.
	3rd	Response to R-L circuit under DC condition.
	4th	Response to R-C circuit under DC condition.
	5th	Response to RLC circuit under DC condition.
11th	1st	Application of Laplace transform for solution of D.C transient circuits.
	2nd	Problems related to above topics.
	3rd	Problems related to above topics.
	4th	Open circuit impedance (z) parameters & related problem
	5th	Short circuit admittance (y) parameters & related problem
12th	1st	Transmission (ABCD) parameters & related problem
	2nd	Hybrid (h) parameters & related problem
	3rd	Inter relationships of different parameters.

	4th	Inter relationships of different parameters.
	5th	Problems on inter-relationship
13th	1st	T and π representation
	2nd	Classification of filters.
	3rd	Filter networks.
	4th	Equations of filter networks
	5th	Classification of pass Band, stop Band and cut-off frequency.
14th	1st	Characteristic impedance in the pass and stop bands
	2nd	Constant – K low pass filter
	3rd	Constant – K high pass filter
	4th	Constant – K Band pass filter
	5th	Constant – K Band elimination filler
15th	1st	m- derived T section filter.
	2nd	Tutorial.
	3rd	Tutorial.
	4th	Tutorial.
	5th	Tutorial.