



CAPITAL SCHOOL OF ENGINEERING

PLOT NO. 1288, MAHATAPALLA, BAJAPUR, KHURDA, PIN-752060

Session: 2023-2024

Course Name: DIPLOMA

Theory/Practical: Theory

Section : A

Semester : 3

Branch Name: ELECTRICAL

Subject Name: TH 2 :Circuit and Network Theory

Teacher Name: SUMAN DAS

Credit '--' External Evaluation(Marked) '80' Internal Evaluation(Marked)
'20'

Text Books:

Sl.No	Text Books
1	Electrical Technology Volume – I B. L. Thereja S. Chand
2	Network Analysis and Synthesis B.R.Gupta S.CHAND

Reference books:

Sl.No	Reference books
1	Circuit and Networks Sakhija & Nagsarkar OXFORD

Course Outcomes:

Sl.No	Course Outcomes
1	To develop the concept on Electrical circuit parameters
2	To develop problem solving ability on magnetic Circuit
3	To develop knowledge on network analysis
4	Use of theorems in problem solving
5	To develop knowledge on R-L, R-C and R-L-C circuit analysis in A.C
6	To understand the behavior of circuit in transient condition
7	To develop knowledge of filters and their circuit characteristics

SL No.	Lecture No.	Module/Unit No.	Topic To Be Taught	Cos	Reference Material Links
1	1	MAGNETIC CIRCUITS	Introduction	Cos 2	
2	2	MAGNETIC CIRCUITS	Magnetizing force, Intensity, MMF, flux and their relations	Cos 2	
3	3	MAGNETIC CIRCUITS	Permeability, reluctance and permeance	Cos 2	
4	4	MAGNETIC CIRCUITS	Analogy between electric and Magnetic Circuits	Cos 2	
5	5	MAGNETIC CIRCUITS	B-H Curve	Cos 2	

SL No.	Lecture No.	Module/Unit No.	Topic To Be Taught	Cos	Reference Material Links
6	6	MAGNETIC CIRCUITS	Series & parallel magnetic circuit	Cos 2	
7	7	MAGNETIC CIRCUITS	Hysteresis loop	Cos 2	
8	8	COUPLED CIRCUITS	Self Inductance and Mutual Inductance	Cos 2	
9	9	COUPLED CIRCUITS	Conductively coupled circuit and mutual impedance	Cos 2	
10	10	COUPLED CIRCUITS	Coefficient of coupling	Cos 2	
11	11	COUPLED CIRCUITS	Series and parallel connection of coupled inductors	Cos 2	
12	12	COUPLED CIRCUITS	Solve numerical problems	Cos 2	
13	13	Circuit Elements And Analysis	Active, Passive, Unilateral & bilateral, Linear & Non linear elements	Cos 1	
14	14	Circuit Elements And Analysis	Mesh Analysis, Mesh Equations by inspection	Cos 3	
15	15	Circuit Elements And Analysis	Super mesh Analysis	Cos 3	
16	16	Circuit Elements And Analysis	Nodal Analysis, Nodal Equations by inspection	Cos 3	
17	17	Circuit Elements And Analysis	Super node Analysis Source Transformation Technique	Cos 3	
18	18	Circuit Elements And Analysis	Solve numerical problems	Cos 3	
19	19	Network Theorems	Star to delta and delta to star transformation	Cos 3	
20	20	Network Theorems	Super position Theorem	Cos 4	
21	21	Network Theorems	Thevenin's Theorem	Cos 4	
22	22	Network Theorems	Norton's Theorem	Cos 4	
23	23	Network Theorems	Maximum power Transfer Theorem	Cos 4	
24	24	Network Theorems	Maximum power Transfer Theorem	Cos 4	
25	25	Ac Circuit And Resonance	A.C. through R-L, R-C & R-L-C Circuit	Cos 5	
26	26	Ac Circuit And Resonance	Solution of problems of A.C. through R-L, R-	Cos 5	

SL No.	Lecture No.	Module/Unit No.	Topic To Be Taught	Cos	Reference Material Links
			C & R-L-C series Circuit by complex algebra method		
27	27	Ac Circuit And Resonance	Solution of problems of A.C. through R-L, R-C & R-L-C parallel & Composite Circuits	Cos 5	
28	28	Ac Circuit And Resonance	Power factor & power triangle	Cos 5	
29	29	Ac Circuit And Resonance	Deduce expression for active, reactive, apparent power	Cos 5	
30	30	Ac Circuit And Resonance	Derive the resonant frequency of series resonance and parallel resonance circuit	Cos 5	
31	31	Ac Circuit And Resonance	Define Bandwidth, Selectivity & Q-factor in series circuit	Cos 5	
32	32	Ac Circuit And Resonance	Solve numerical problems	Cos 5	
33	33	Poly-phase Circuit	Concept of poly-phase system and phase sequence	Cos 3	
34	34	Poly-phase Circuit	Relation between phase and line quantities in star & delta connection	Cos 3	
35	35	Poly-phase Circuit	Power equation in 3-phase balanced circuit	Cos 3	
36	36	Poly-phase Circuit	Solve numerical problems	Cos 3	
37	37	Poly-phase Circuit	Measurement of 3-phase power by two wattmeter method	Cos 3	
38	38	Poly-phase Circuit	Solve numerical problems	Cos 3	
39	39	TRANSIENTS	Steady state & transient state response	Cos 6	
40	40	TRANSIENTS	Steady state & transient state response	Cos 6	
41	41	TRANSIENTS	Response to R-L, R-C & RLC circuit under	Cos 6	

SL No.	Lecture No.	Module/Unit No.	Topic To Be Taught	Cos	Reference Material Links
			DC condition		
42	42	TRANSIENTS	Response to R-L, R-C & RLC circuit under DC condition	Cos 6	
43	43	TRANSIENTS	Response to R-L, R-C & RLC circuit under DC condition	Cos 6	
44	44	TRANSIENTS	Response to R-L, R-C & RLC circuit under DC condition	Cos 6	
45	45	TWO-PORT NETWORK	Open circuit impedance (z) parameters	Cos 1	
46	46	TWO-PORT NETWORK	Short circuit admittance (y) parameters	Cos 1	
47	47	TWO-PORT NETWORK	Transmission (ABCD) parameters	Cos 1	
48	48	TWO-PORT NETWORK	Hybrid (h) parameters	Cos 1	
49	49	TWO-PORT NETWORK	Inter relationships of different parameters	Cos 1	
50	50	TWO-PORT NETWORK	T and ? representation	Cos 1	
51	51	TWO-PORT NETWORK	Solve numerical problems	Cos 1	
52	52	FILTERS	Define filter	Cos 6	
53	53	FILTERS	Classification of pass Band, stop Band and cut-off frequency	Cos 6	
54	54	FILTERS	Classification of filters	Cos 6	
55	55	FILTERS	Constant – K low pass filter	Cos 6	
56	56	FILTERS	Constant – K high pass filter	Cos 6	
57	57	FILTERS	Constant – K Band pass filter	Cos 6	
58	58	FILTERS	Constant – K Band elimination filter	Cos 6	
59	59	FILTERS	Solve Numerical problems	Cos 6	

S. Dash
Subject Teacher

M. Dash
HOD

Tomu
Principal



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Branch Name: ELECTRICAL

Subject Name: TH 4 :Electrical Engineering Material

Teacher Name: R.KRISHNA RANI

Credit " External Evaluation(Marked) '80' Internal Evaluation(Marked) '20'

Text Books:

Sl.No	Text Books
1	K.B.Raina, S.K. Bhattacharya, T. Joneja

Reference books:

Sl.No	Reference books
1	C.S.Indulkar, S.Thiruvengadam

Course Outcomes:

Sl.No	Course Outcomes
1	to study about conducting materials
2	To study about semiconducting materials
3	to study about insulating materials
4	to be familiar with dielectric material
5	To study about magnetic materials
6	To study about other materials

SL No.	Lecture No.	Module/Unit No.	Topic To Be Taught	Cos	Reference Material Links
1	1	Conducting Materials	Introduction	Cos 1	
2	2	Conducting Materials	Resistivity, factors affecting resistivity	Cos 1	
3	3	Conducting Materials	Classification of conducting materials into low-resistivity material	Cos 1	
4	4	Conducting Materials	high resistivity materials	Cos 1	
5	5	Conducting Materials	Low Resistivity Materials and their Applications. (Copper, Silver	Cos 1	
6	6	Conducting Materials	Gold, Aluminum, Steel)	Cos 1	
7	7	Conducting Materials	Stranded conductors	Cos 1	
8	8	Conducting Materials	Bundled conductors	Cos 1	

SL No.	Lecture No.	Module/Unit No.	Topic To Be Taught	Cos	Reference Material Links
9	9	Conducting Materials	Low resistivity copper alloys	Cos 1	
10	10	Conducting Materials	High Resistivity Materials and their Applications	Cos 1	
11	11	Conducting Materials	Tungsten, Carbon, Platinum, Mercury)	Cos 1	
12	12	Conducting Materials	Superconductivity	Cos 1	
13	13	Conducting Materials	Superconducting materials	Cos 1	
14	14	Conducting Materials	Application of superconductor materials	Cos 1	
15	15	Semiconducting Materials	Introduction , Semiconductors , Electron Energy and Energy Band Theory	Cos 2	
16	16	Semiconducting Materials	Excitation of Atoms , Insulators	Cos 2	
17	17	Semiconducting Materials	Semiconductors and Conductors, Semiconductor Material	Cos 2	
18	18	Semiconducting Materials	Covalent Bonds , Intrinsic Semiconductors , Extrinsic Semiconductor	Cos 2	
19	19	Semiconducting Materials	N-Type Materials, P-Type Materials	Cos 2	
20	20	Semiconducting Materials	Minority and Majority Carriers	Cos 2	
21	21	Semiconducting Materials	Applications of Semiconductor materials , Rectifiers , Temperature-sensitive resistors or thermistors	Cos 2	
22	22	Semiconducting Materials	Photoconductive cells , Photovoltaic cells	Cos 2	
23	23	Semiconducting Materials	Varistors , Transistors	Cos 2	
24	24	Semiconducting Materials	Hall effect generators , Solar power	Cos 2	
25	25	Insulating Materials	Introduction , General properties of Insulating Materials	Cos 3	

SL No.	Lecture No.	Module/Unit No.	Topic To Be Taught	Cos	Reference Material Links
26	26	Insulating Materials	Electrical properties , Visual properties	Cos 3	
27	27	Insulating Materials	Mechanical properties , Thermal properties	Cos 3	
28	28	Insulating Materials	Chemical properties , Ageing	Cos 3	
29	29	Insulating Materials	3 Insulating Materials – Classification, properties, applications	Cos 3	
30	30	Insulating Materials	Classification of insulating materials on the basis physical and chemical structure	Cos 3	
31	31	Insulating Materials	Insulating Gases , Introduction , Commonly used insulating gases	Cos 3	
32	32	Dielectric Materials	Introduction	Cos 4	
33	33	Dielectric Materials	Dielectric Constant of Permittivity	Cos 4	
34	34	Dielectric Materials	Polarization	Cos 4	
35	35	Dielectric Materials	Dielectric Loss	Cos 4	
36	36	Dielectric Materials	Electric Conductivity of Dielectrics and their Break Down	Cos 4	
37	37	Dielectric Materials	Properties of Dielectrics	Cos 4	
38	38	Dielectric Materials	Applications of Dielectrics	Cos 4	
39	39	Magnetic Materials	Introduction , Classification	Cos 5	
40	40	Magnetic Materials	Diamagnetism , Para magnetism , Ferromagnetism	Cos 5	
41	41	Magnetic Materials	Magnetization Curve , Hysteresis	Cos 5	
42	42	Magnetic Materials	Eddy Currents , Curie Poin	Cos 5	
43	43	Magnetic Materials	Magneto-striction	Cos 5	
44	44	Magnetic Materials	Soft and Hard magnetic Materials	Cos 5	
45	45	Magnetic Materials	Soft and Hard magnetic Materials	Cos 5	
46	46	Materials for Special Purposes	Introduction , Structural Materials	Cos 6	
47	47	Materials for Special	Protective Materials ,	Cos 6	

SL No.	Lecture No.	Module/Unit No.	Topic To Be Taught	Cos	Reference Material Links
		Purposes	Lead		
48	48	Materials for Special Purposes	Steel tapes, wires and strips	Cos 6	
49	49	Materials for Special Purposes	Other Materials , Thermocouple materials	Cos 6	
50	50	Materials for Special Purposes	Bimetals	Cos 6	
51	51	Materials for Special Purposes	Soldering Materials	Cos 6	
52	52	Materials for Special Purposes	Fuse and Fuse materials	Cos 6	
53	53	Materials for Special Purposes	Dehydrating material	Cos 6	

R. Krishna Rani
Subject Teacher

M Dauli
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