Sri Indu
College of Engineering & Technology
UGC Autonomous Institution
Recognized under 2(f) & 12(B) of UGC Act 1956,
NAAC, Approved by AICTE &
Permanently Affiliated to JNTUH

Estd.2001

NAAC
NATIONAL ASSESSMENT AND ACCREDITATION COUNCIL

HANDOUT

First year CSE- Semester I

DEPARTMENT OF HUMANITIES & BASIC SCIENCES

ACADEMIC YEAR 2022-2023

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

HANDOUT- INDEX

S. No	Contents
1	Vision, Mission, PEOs, PSOs, Pos & Cos
2	Institution Academic Calendar
3	Department Academic Calendar
4	Subject wise
i)	Syllabus Copy
ii)	Lesson Plan
iii)	Question Bank
iv)	End Examination Model Question Paper(last 3years)

SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY

B. TECH –COMPUTER SCIENCE AND ENGINEERING

INSTITUTION VISION

To be a premier Institution in Engineering & Technology and Management with competency, values and social consciousness.

INSTITUTION MISSION

IM_1 Provide high quality academic programs, training activities and research facilities.

IM_2 Promote Continuous Industry-Institute interaction for employability, Entrepreneurship, leadership and research aptitude among stakeholders.

IM_3 Contribute to the economical and technological development of the region, state and nation.

DEPARTMENT VISION

To be a technologically adaptive centre for computing by grooming the students as top notch professionals.

MISSION OF THE DEPARTMENT

DM1: To offer quality education in computing.

DM2: To provide an environment that enables overall development of all the stakeholders.

DM3: To impart training on emerging technologies like Data Analytics, Artificial Intelligence and Internet of Things.

DM4: To encourage participation of stakeholders in research and development.

PROGRAM EDUCATIONAL OBJECTIVES(PEO'S)

PEO1	**Higher Studies:** Graduates with an ability to apply knowledge of Basic Sciencesand programming skills in their career and higher education.
PE02	**Lifelong Learning:** Graduates with an ability to adopt new technologies for ever changing IT industry needs through Self-Study, Critical thinking and Problem solving skills.
PEO3	**Professional Skills :** Graduates will be ready to work in projects related to complex problems involving multidisciplinary projects with effective analyticalskills.
PEO4	**Engineering citizenship:** Graduates with an ability to communicate well andexhibit social, technical and ethical responsibility in process or product.

PROGRAM OUTCOMES (PO'S) & PROGRAM SPECIFIC OUTCOMES (PSOs)

PO1	**Engineering Knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO2	**Problem Analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO3	**Design / Development of Solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO4	**Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO5	**Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO6	**The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO7	**Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO8	**Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO9	**Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10	**Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO11	**Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO12	**Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.
	Program Specific Outcomes
PSO 1	To develop software projects using standard practices and suitable programming Environment.
PSO 2	To identify, formulate and solve the real life problems faced in the society, industry and other areas by applying the skills of the programming languages, networks and databases learned.
PSO 3	To apply computer science knowledge in exploring and adopting latest technologies in various inter-disciplinary research activities.

SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY
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Sheriguda (V), Ibrahimpatnam, R.R.Dist, Hyderabad - 501 510

D4

BR-22

Lr.No.SICET/AUTO/DAE/BR-22/Academic Cal./655/2022 Date: 27.10.2022

I B.TECH. ACADEMIC CALENDAR
ACADEMIC YEAR : 2022-2023

Dr.G. SURESH,
Principal,

To,
All the HODs
Sir,

Sub: SICET (Autonomous) - Academic & Evaluation - Academic Calendar for **I B.Tech - I & II Semester** for the academic year **2022-23** – Reg.

****

The approved Academic Calendar for **I B.Tech – I & II Semester** for the academic year **2022-23** is given below:

I SEMESTER

S.NO.	EVENT	PERIOD	DURATION
1.	Induction & Orientation Programme	**03.11.2022**	
2.	1St Spell of Instructions for covering First Two and a half Units	03.11.2022 – 28.12.2022	8 Weeks
3.	I Mid Examinations	29.12.2022 – 04.01.2023	1 Week
4.	Submission of I Mid Term Examination Marks to the Autonomous Section on or before	10.01.2023	
5.	2nd Spell of Instructions for covering Remaining Two and a half Units	05.01.2023 – 02.03.2023	8 Weeks
6.	II Mid Examinations	03.03.2023 – 09.03.2023	1 Week
7.	Preparation & Practical Examinations and Remidial Mid Test (RMT)	10.03.2023 – 16.03.2023	1 Week
8.	Submission of II Mid Term Examination Marks Marks to the Autonomous Section on or before	16.03.2023	
9.	I Semester End Examinations	17.03.2023 – 01.04.2023	2 Weeks
Commencement of Class-Work for I B.Tech - II Semester 03.04.2023			

II SEMESTER

S.NO.	EVENT	PERIOD	DURATION
1.	Commencement of II Sem Class Work	**03.04.2023**	
2.	1st Spell of Instructions for covering First Two and a half Units (Including Summer Vacation)	03.04.2023 – 10.06.2023	10 Weeks
	Summer Vacation	15.05.2023 – 27.05.2023	2 Weeks
3.	I Mid Examinations	12.06.2023 – 17.06.2023	1 Week
4.	Submission of I Mid Term Examination Marks to the Autonomous Section on or before	23.06.2023	
5.	2nd Spell of Instructions for covering Remaining Two and a half Units	19.06.2023 – 12.08.2023	8 Weeks
6.	II Mid Examinations	14.08.2023 – 19.08.2023	1 Week
7.	Preparation & Practical Examinations and Remidial Mid Test (RMT)	21.08.2023 – 26.08.2023	1 Week
8.	Submission of II Mid Term Examination Marks Marks to the Autonomous Section on or before	26.08.2023	
9.	II Semester End Examinations	28.08.2023 – 09.09.2023	2 Weeks
Commencement of Class Work for II B.Tech – I Semester - 11.09.2023			

ACE **CE** **DEAN** **PRINCIPAL**

Copy to all the Heads of the Depts. and AO.

CONTROLLER OF EXAMINATIONS
Sri Indu College of Engineering & Technology
(An Autonomous Institution under JNTUH)
Sheriguda (V), Ibrahimpatnam, R.R. Dist-501510.

DIRECTOR
(Academic Audit)
Sri Indu College of Engineering & Technology
Sheriguda, IBP, R.R. Dist-501510.

PRINCIPAL
Sri Indu College of Engineering & Technology
(An Autonomous Institution Under JNTUH)
Sheriguda (V), Ibrahimpatnam, R.R. Dist-501510.

SRI INDU COLLEGE OF ENGINEERING AND TECHNOLOGY (AUTONOMOUS)

DEPARTMENT OF HUMANITIES & SCIENCES

DEPARTMENT CALENDAR – 2022-2023 (I B.Tech – I SEMESTER)

																	APRIL - 23			
DAYS						JANUARY -23											1	I SEMESTER END EXAMINATIONS		
SUNDAY					1	NEW YEAR/ HOLIDAY											2	HOLIDAY		
MONDAY	NOVEMBER -22				2	MID I EXAM											3	COMMENCEMENT OF II SEMESTER CLASSES- I MID		
TUESDAY	1				3	MID I EXAM	FEBRUARY - 23				MARCH - 23						4			
WEDNESDAY	2		DECEMBER - 22		4	MID I EXAM	1		1								5			
THURSDAY	3	INDUCTION & ORIENTATION PROGRAM I SEMESTER CLASSES- I MID	1		5	I SEMESTER CLASSES- II MID	2		2								6			
FRIDAY	4		2		6		3		3	MID II EXAM							7			
SATURDAY	5		3		7		4		4	MID II EXAM							8			
SUNDAY	6	HOLIDAY	4	HOLIDAY	8	HOLIDAY	5	HOLIDAY	5	HOLIDAY							9	HOLIDAY		
MONDAY	7	INDUCTION & ORIENTATION PROGRAM I SEMESTER CLASSES- I MID	5		9		6		6	MID II EXAM							10			
TUESDAY	8		6		10		7		7	MID II EXAM							11			
WEDNESDAY	9		7		11		8		8	HOLI							12			
THURSDAY	10		8		12		9		9	MID II EXAM							13			
FRIDAY	11		9		13	PONGAL / HOLIDAY	10		10	PREPARATION & LAB END EXAMINATIONS							14			
SATURDAY	12		10		14	PONGAL / HOLIDAY	11		11								15			
SUNDAY	13	HOLIDAY	11	HOLIDAY	15	PONGAL/ HOLIDAY	12	HOLIDAY	12	HOLIDAY							16	HOLIDAY		
MONDAY	14		12		16	PONGAL / HOLIDAY	13		13	PREPARATION & LAB END EXAMINATIONS							17			
TUESDAY	15		13		17		14		14								18			
WEDNESDAY	16		14		18		15		15								19			
THURSDAY	17		15		19		16		16	I SEMESTER END EXAMINATIONS							20			
FRIDAY	18		16		20		17		17								21			
SATURDAY	19		17		21		18	SIVARATHRI / HOLIDAY	18								22			
SUNDAY	20	HOLIDAY	18	HOLIDAY	22	HOLIDAY	19	HOLIDAY	19	HOLIDAY							23	HOLIDAY		
MONDAY	21		19		23		20		20	I SEMESTER END EXAMINATIONS							24			
TUESDAY	22		20		24		21		21								25			
WEDNESDAY	23		21		25		22		22	UGADI							26			
THURSDAY	24		22		26	REPUBLIC DAY	23		23	I SEMESTER END EXAMINATIONS							27			
FRIDAY	25		23		27		24		24								28			
SATURDAY	26		24		28		25		25								29			
SUNDAY	27	HOLIDAY	25	X-MAS	29	HOLIDAY	26	HOLIDAY	26	HOLIDAY							30	HOLIDAY		
MONDAY	28		26	BOXING DAY/ HOLIDAY	30		27		27	I SEMESTER END EXAMINATIONS										
TUESDAY	29		27		31		28		28											
WEDNESDAY	30		28						29											
THURSDAY			29						30	SRI RAMA NAVAMI										
FRIDAY			30	MID I EXAM					31	I SEMESTER END EXAMINATIONS										
SATURDAY			31	MID I EXAM																

SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY

(An Autonomous Institution under UGC, New Delhi)

B.Tech. - I Year – I Semester

L	T	P	C
2	0	0	2

(R22EEE1114) BASIC ELECTRICAL ENGINEERING

Course Objectives:

- To understand DC and Single & Three phase AC circuits
- To study and understand the different types of DC, AC machines and Transformers.
- To import the knowledge of various electrical installations and the concept of power, power factor and its improvement.

Course Outcomes: After learning the contents of this paper the student must be able to

- Understand and analyze basic Electrical circuits
- Study the working principles of Electrical Machines and Transformers
- Introduce components of Low Voltage Electrical Installations.

Course Objectives	Program Outcomes											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
To understandDC and Single & Three phase AC circuits.	3	2	1		2	0	0	1	2	0	1	2
To study and understand the different types of DC,AC machinesand Transformers.	3	2	1	1	3	0	0	0	2	0	1	1
To import the knowledge of various electrical installations and the concept of power, powerfactor and its improvement.	3	2	0		3	0	0	0	1	2	1	1

Course Outcomes	Program Outcomes											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Understand and analyse basic Electrical circuits	3	2	1	0	1	0	0	0	2	0	2	2
Study the workingprinciples of Electrical Machines and Transformers	3	2	1	0	3	1	0	1	1	2	1	2
Introduce components ofLow VoltageElectrical Installations.	3	2	1	1	3	2	0	0	1	0	2	2

UNIT-I:

D.C. Circuits: Electrical circuit elements (R, L and C), voltage and current sources, KVL&KCL, analysisof simple circuits with dc excitation. Superposition, Thevenin and Norton Theorems. Time-domain analysis of first-order RL and RC circuits.

UNIT-II:

A.C. Circuits: Representation of sinusoidal waveforms, peak and rms values, phasor representation, real power, reactive power, apparent power, power factor, Analysis of single-phase ac circuits consisting of R, L, C, RL, RC, RLC combinations (series and parallel), resonance in series R-L-C circuit. Three-phase

balanced circuits, voltage and current relations in star and delta connections.

UNIT-III:

Transformers: Ideal and practical transformer, equivalent circuit, losses in transformers, regulation and efficiency. Auto-transformer and three-phase transformer connections.

UNIT-IV:

Electrical Machines: Construction and working principle of dc machine, performance characteristics of dc shunt machine. Generation of rotating magnetic field, Construction and working of a three-phase induction motor, Significance of torque-slip characteristics. Single-phase induction motor, Construction and working. Construction and working of synchronous generator.

UNIT-V:

Electrical Installations: Components of LT Switchgear: Switch Fuse Unit (SFU), MCB, ELCB, MCCB, Types of Wires and Cables, Earthing. Types of Batteries, Important Characteristics for Batteries. Elementary calculations for energy consumption, power factor improvement and battery backup.

TEXT BOOKS:

1. D.P. Kothari and I. J. Nagrath, "Basic Electrical Engineering", Tata McGraw Hill, 4th Edition,2019.
2. MS Naidu and S Kamakshaiah, "Basic Electrical Engineering", Tata McGraw Hill, 2nd Edition,2008.

REFERENCE BOOKS:

1. P. Ramana, M. Suryakalavathi, G.T. Chandrasheker, "Basic Electrical Engineering", S. Chand,2nd Edition, 2019.
2. D. C. Kulshreshtha, "Basic Electrical Engineering", McGraw Hill, 2009
3. M. S. Sukhija, T. K. Nagsarkar, "Basic Electrical and Electronics Engineering", Oxford, 1stEdition, 2012.
4. Abhijit Chakrabarthi, Sudipta Debnath, Chandan Kumar Chanda, "Basic Electrical Engineering", 2nd Edition, McGraw Hill, 2021.
5. L. S. Bobrow, "Fundamentals of Electrical Engineering", Oxford University Press, 2011.
6. E. Hughes, "Electrical and Electronics Technology", Pearson, 2010.
7. V. D. Toro, "Electrical Engineering Fundamentals", Prentice Hall India, 1989

	SRI INDU COLLEGE OF ENGG & TECH **LESSON PLAN** **(Regulation :R22)** **Department of Computer Science & Engineering**	**Prepared on** **Rev1:** **Page: 1 of 7**

Sub. Code & Title	**R22EEE1101 Basic Electrical Engineering**		
Academic Year: 2022-23		**Year/Sem./Section**	**I-I CSE**
Faculty Name & Designation	**S.ASHLESHA**		

Unit/ Item No.	Topic (s)	Book Reference	Page (s) From	Page (s) To	Teaching Methodology	Propose dNo. of Periods	Actual Dateof Handled	CO/RBT
UNIT-I								
I	**D.C. Circuits**					**12**		
1.1	Introduction Electrical circuit	T1	1	2	Black board	01		CO1, L1
1.2	Electrical circuit elements (R, L and C),	T1	11	16	Black board	02		CO1, L1
1.3	voltage and current sources	T1	17	18	Black board	01		CO1, L1
1.4	KVL&KCL, analysis of simplecircuits dc excitation.	T1	22	23	Black board	02		CO1, L1
1.5	Superposition, Thevenin and Norton Theorems.	T1	68	69	Black board	02		CO1,L1
1.6	Time-domain analysis of first-order RL and RC circuits.	T2	117	129	Black board	02		CO1,L1
1.7 1	Numerical Problems	T2	129	139	Black board	02		CO1,L1

Review **Signature of the HOD/Coordinator**

	SRI INDU COLLEGE OF ENGG & TECH LESSON PLAN (Regulation :R22) Department of Computer Science & Engineering	Prepared on Rev1: Page: 1 of 7

Sub. Code & Title	R22EEE1101 Basic Electrical Engineering		
Academic Year: 2022-23	Year/Sem./Section	I-I CSE	
Faculty Name & Designation	S.ASHLESHA		

Unit/ Item No.	Topic (s)	Book Reference	Page(s) From	Page(s) To	Teaching Methodology	Proposed No. of Periods	Actual Date of Handled	CO/RBT
	UNIT II							
	A.C. Circuits					**17**		
2.1	Introduction	T2	184	185	Black board	01		CO 3, L1
2.2	Representation of sinusoidal waveforms,	T1	165	166	Black board	02		CO 3, L4
2.3	peak and rms values, phasorrepresentation	T1	166	171	Black board	02		CO 3, L5
2.4	RealPower, Reactive Power, Apparent Power, Power factor,	T1	183	185	Black board	02		CO 3, L5
2.5	Analysis of single-phase accircuits R, L, C	T2	168	174	Black board	01		CO 3,L4
2.6	RL, RC, RLC combinations in series	T2	184	188	Black board	01		CO 3, L2
2.7	R, L, C, RL, RC, RLC combinationsin parallel	T2	190	194	Black board	01		CO 3, L2
2.8	Resonance in series R- L-Ccircuit	T2	212	216	Black board	01		CO 3, L3
2.9	Three-phase balanced circuits, voltage and current relations in star connections.	T2	239	240	Black board	02		CO 3, L2
2.10	Three-phase balanced circuits,voltage and current relations indelta connections.	T2	240	244	Black board	02		CO 3, L3
2.11	Numerical problems	T2	145	230	Black board	02		CO 3, L5

	SRI INDU COLLEGE OF ENGG & TECH LESSON PLAN (Regulation :R22) Department of Computer Science & Engineering	Prepared on Rev1: Page: 1 of 7
Sub. Code & Title	R22EEE1101 Basic Electrical Engineering	
Academic Year: 2022-23	Year/Sem./Section: I-I CSE	
Faculty Name & Designation	S.ASHLESHA	

	Review	Signature of the HOD/Coordinator	

Unit/ Item No.	Topic (s)	Book Reference	Page (s) From	Page (s) To	Teaching Methodology	Proposed No. of Periods	Actual Date of Handled	CO/RBT
	UNIT III							
	Transformers					**11**		
3.1	Introduction	T2	261	262	Black board	01		CO4, L1
3.2	Ideal and practical transformer, losses in transformers,	T2	267	279	Black board	01		CO4, L2
3.3	equivalent circuit,	T2	279	283	Black board	02		CO4, L4
3.4	regulation and efficiency.	T2	283	288	Black board	02		CO4, L5
3.5	Auto-transformer	T2	290	293	Black board	01		CO4, L2
3.6	three-phase transformer connections	T2	294	297	Black board	02		CO4, L2
3.7	Numerical problems	T2	266	297	Black board	02		CO4, L5
	Review	**Signature of the HOD/Coordinator**						

	SRI INDU COLLEGE OF ENGG & TECH LESSON PLAN (Regulation :R22) Department of Computer Science & Engineering	Prepared on Rev1: Page: 1 of 7
Sub. Code & Title	R22EEE1101 Basic Electrical Engineering	
Academic Year: 2022-23	Year/Sem./Section: I-I CSE	
Faculty Name & Designation	S.ASHLESHA	

Unit/ Item No.	Topic (s)	Book Reference	Page (s) From	Page (s) To	Teaching Methodology	Proposed No. of Periods	Actual Date of Handled	CO/RBT
	UNIT IV							
	Electrical Machines					**16**		
4.1	Introduction	T2	314	315	Black board	01		CO5, L1
4.2	Generation of rotating magnetic fields	T2	315	317	Black board	01		CO5, L2
4.3	Construction and working of a three-phase induction motor,	T2	318	322	Black board	02		CO5, L1
4.4	Significance of torque- slip characteristic.	T2	328	333	Black board	02		CO5, L2
4.5	Loss components and efficiency, starting and speed controlof induction motor	T2	326	335	Black board	02		CO5, L1
4.6	Single-phase induction motor. Construction, working,	T2	336	344	Black board	02		CO5, L1
4.7	torque-speed characteristicand	T2	337	339	Black board	01		CO5, L2
4.8	speed control of separately excited dc motor.	T2	358	369	Black board	01		CO5, L4
4.9	Construction and working of synchronous generators	T2	370	375	Black board	02		CO5, L1
4.10	Numerical problems	T2	317	377	Black board	02		CO5, L5
	Review	**Signature of the HOD/Coordinator**						

	SRI INDU COLLEGE OF ENGG & TECH **LESSON PLAN** **(Regulation :R22)** **Department of Computer Science & Engineering**	**Prepared on** **Rev1:** **Page: 1 of 7**

Sub. Code & Title	**R22EEE1101 Basic Electrical Engineering**		
Academic Year: 2022-23		**Year/Sem./Section**	**I-I CSE**
Faculty Name & Designation	**S.ASHLESHA**		

Unit/ Item No.	**Topic (s)**	**Book Reference**	**Page (s) From**	**To**	**Teaching Methodology**	**Proposed No. of Periods**	**Actual Date of Handled**	**CO/RBT**
UNIT V								
	Electrical Installations					**11**		
5.1	Introduction	T2	466	466	Black board	01		CO5, L1
5.2	Components of LT Switchgear:	T2	467	469	Black board	01		CO5, L2
5.3	Switch Fuse Unit (SFU), MCB, ELCB, MCCB,	T2	472	486	Black board	02		CO5, L2
5.4	Types of Wires and Cables, Earthing.	T2	486	490	Black board	02		CO5, L1
5.5	Types of Batteries, Important Characteristics for Batteries.	T2	494	498	Black board	02		CO5, L2
5.6	Elementary calculations for energy consumption,	T2	498	500	Black board	02		CO5, L4
5.7	power factor improvement and battery backup.	T2	500	506	Black board	01		CO5, L2
5.8	Numerical problems	T2	498	505	Black board	01		CO5, L5
	Review	**Signature of the HOD/Coordinator**						

LIST OF TEXT BOOKS AND REFERENCES

TEXT BOOKS:

T1. Basic Electrical Engineering - D.P. Kothari and I.J. Nagrath, 3rd edition 2010, Tata McGraw Hill.T2. D.C. Kulshreshtha, "Basic Electrical Engineering", McGraw Hill, 2009.

REFERENCE BOOKS:

R1. L.S. Bobrow, Fundamentals of Electrical Engineering", Oxford University Press, 2011R2. Electrical and Electronics Technology, E. Hughes, 10th Edition, Pearson, 2010

R3. Electrical Engineering Fundamentals, Vincent Deltoro, Second Edition,Prentice Hall India, 1989

WEB LINKS

W1.
https://www.electri
cal4u.com/W2
https://www.shiks
ha.com/
W3 https://www.bharathuniv.ac.in/
W4 https://dbatu.ac.in/wp-content/uploads/2017/09/First-year-BEE.pdfW5
https://nptel.ac.in/courses/108/108/108108076/
W6 https://nptel.ac.in/content/storage2/courses/117106108/Assignment-1.pdf

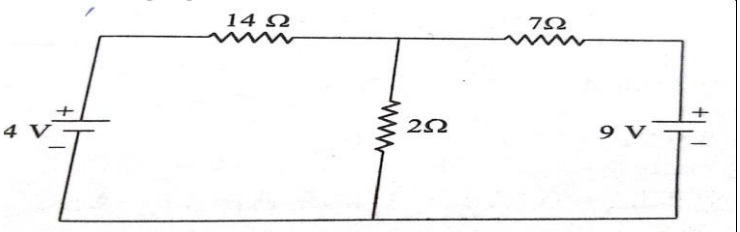
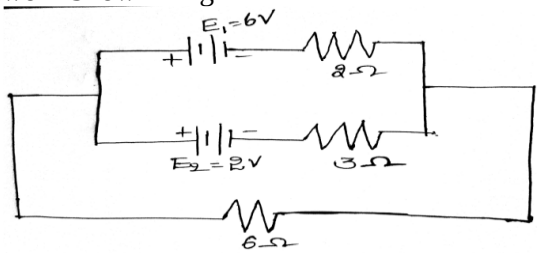
	SRI INDU COLLEGE OF ENGG & TECH **(Regulation :R22)** **Department of Computer Science & Engineering**	**Prepared on** **Rev1:** **Page: 8 of 7**

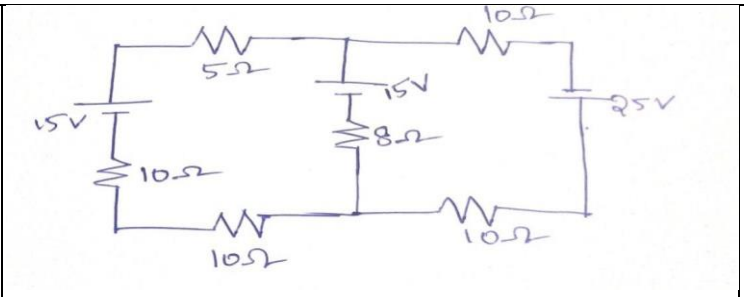
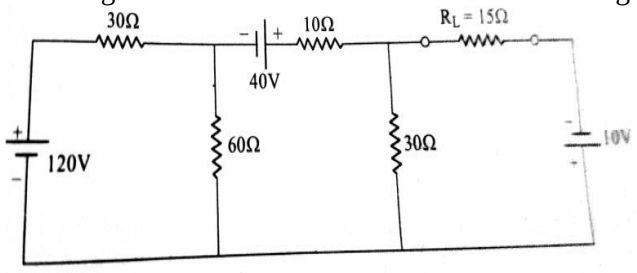
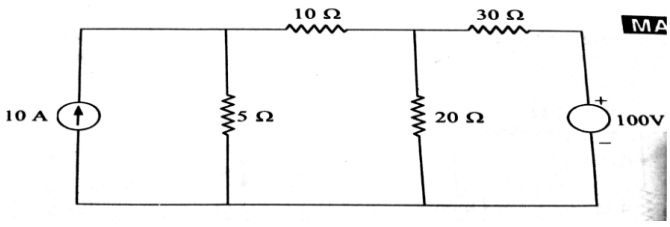
Sub. Code & Title	**R22EEE1101 Basic Electrical Engineering**		
Academic Year: 2022-23	**Year/Sem./Section**	**I-I CSE**	
Faculty Name & Designation	**S.ASHLESHA**		

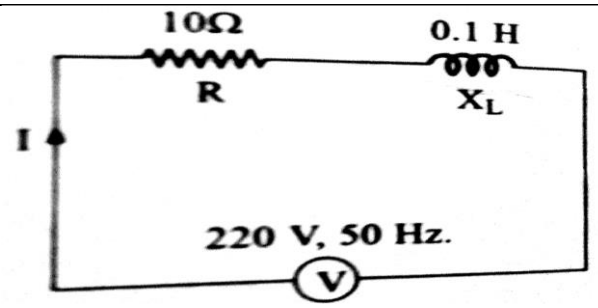
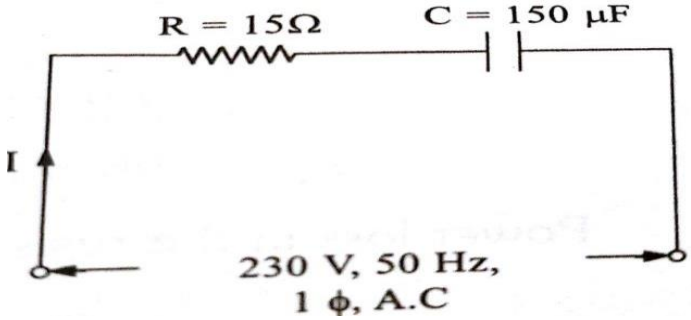
CONTENT BEYOND THE SYLLABUS

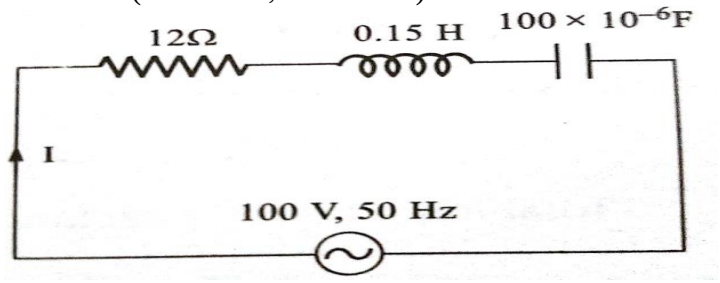
S.No	Topics	Proposed Actions	Date	Resource Person/Mode	POs	PSOs
1.	Star To Delta Tranformation	To get knowledge		E.VENKATESH	PO5, PO6	PSO1,PSO2
2.	Oc & Sc Test On Single Phase Transformer	To get knowledge		B.SREENATH	PO6,PO10	PSO1,PSO2

ASSIGNMENT

S.No.	Assignment Questions	Course Outcome	Books To be Referred	Date Of Announcement	Date Of Submission
I.	Calculate the current in each branch of the circuit as shown in the following figure?  **K2- Understanding**	**CO1**	T2	19-12-2022	5-1-2023
2.	. Calculate the current flowing through 6ohm Resistor in the Network Show In Fig  **K2- Understanding**	**CO1**	T1	19-12-2022	5-1-2023
3.	Find the Currents through all branches in the circuit shown below?	**CO1**	T2	19-12-2022	5-1-2023

	 **K4--Analyzing**				
4.	Using Norton's Theorem find the current in the branch AB containing 15ohm resistor of the network shown in figure?  **K5-Evaluating**	**CO1**	T2	19-12-2022	5-1-2023
5.	Explain the steps for solving a network problem using thevenin's theorem?  **K5- Evaluating**	**CO1**	T1	19-12-2022	5-1-2023
6.	A series RL circuit is Excited by Sinusoidal voltage .Find the Expression for an Impedance and power and draw the phasor diagram? b)A Resistance of 10ohm and inductance of 0.1H are connected in series across a supply of 220v,50Hz determine i)Impedance ii)Current flowing iii)Power Factor iv)the phase angle between V and I? (SEP-2021)	**CO2**	T2	19-12-2022	5-1-2023

	 **K1-Remembering**				
7	a)For A.C circuit consisting of R and C ,Draw the phasor diagram ,also derivethe expression for an impedance ,current and phase angle of the circuit? b)A non inductive Resistance of 15ohms is connected in series with a capacitor of150micro farads capacitance across a 230v,50Hz single phase A.C supply. Calculate i)Impedance of the circuit ii)Current iii)Power Factor and phase angleiv)Power consumed in the circuit v)Equation for the Instantaneous value of current 	**CO2**	**T2**	19-12-2022	5-1-2023
8	a)Sketch and Explain the Phasor diagram of RLC series circuit for i) $Xc>X_L$ ii)$Xc=X_L$ iii)$Xc<X_L$ and Find the Expression for an impedance ,power and phase angle of the circuit? b)A resistance of 12ohms ,an inductance of 0.15H and a capacitance of 100micro farads are connected in series across a 100volts , 50Hz supply .Calculate	**CO2**	**T2**	19-12-2022	5-1-2023

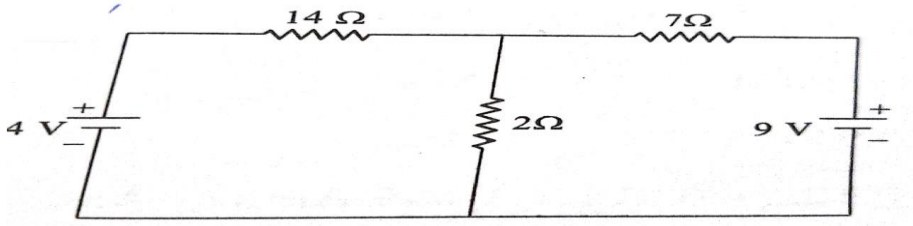
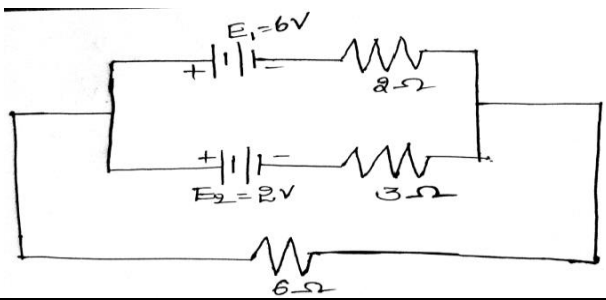
	i)impedance ii)Current iii)Power Factor iv)Power Consumed?(DEC-2018,JULY-2021)  				

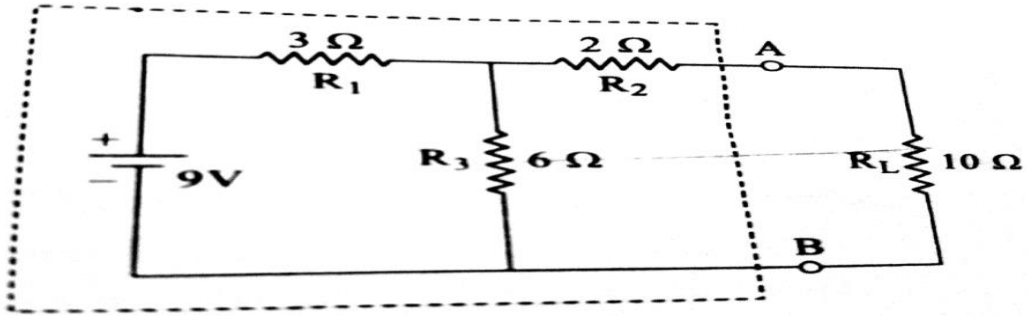
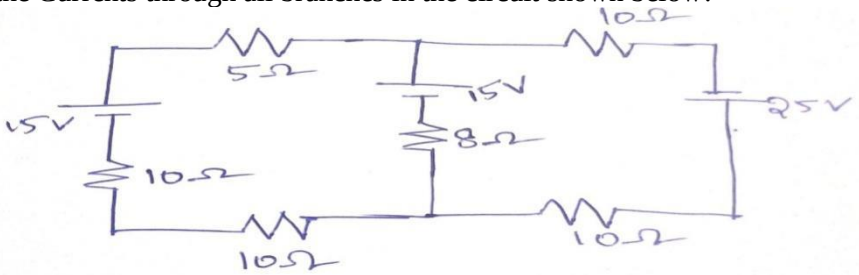
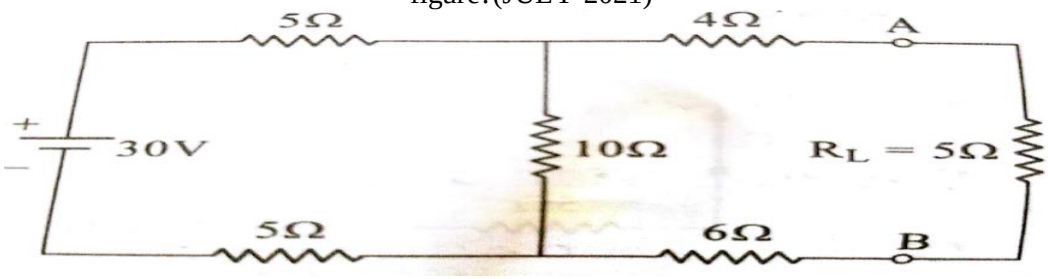
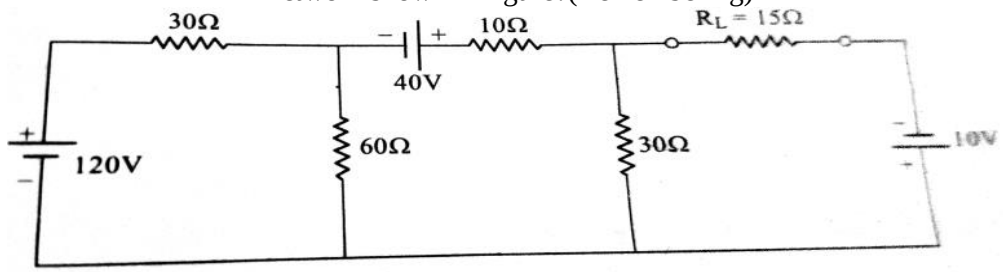
QUESTION BANK WITH BLOOMS TAXONOMY LEVEL (BTL)

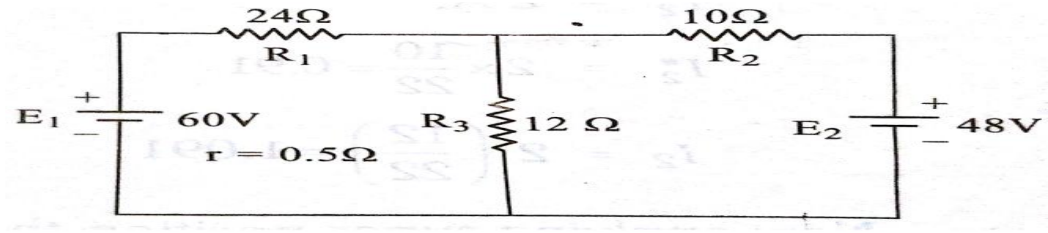
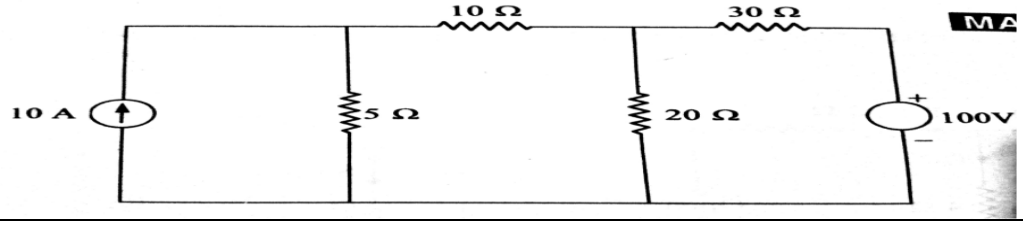
(1. Remembering 2. Understanding 3. Applying 4. Analyzing 5. Evaluating 6. Creating)

UNIT-I DC CIORCUITS			
	MULTIPLE CHOOSE QUESTIONS	**BT Level**	**Course Outcome**
1C1	Kirchhoff's laws are useful in determining ( ) a) Current flowing in a circuit b) EMFs and Voltage drops in a circuit c) Power in a circuit d) All the above	II	CO1
1C2	According to Thevenin's theorem, any bilateral network can be replaced by a network with( ) a)An independent current source in parallel to the equivalent resistance b) An independent voltage source in series with the equivalent resistance c) An independent voltage source in parallel to the resistance d) None of these	III	CO1
1C3	A DC circuit has _____ as a load. ( ) a) Resistance b) Inductance c) Capacitance d) All of the above	II	CO1
1C4	Three resistance 14.5 Ω, 25.5 Ω and 60 Ω are connected in series across 200 V. What will be the voltage drop across 14.5 Ω a)29 V b)13.5 V c)14 V d)18 V	V	CO1
1C5	Three 2 Ω resistors are connected to form a triangle. The resistance between any two corners a)6 Ω b)2 Ω c)(3/4) Ω d)(4/3) Ω	V	CO1

1C6	The internal resistance of an ideal voltage source is …… a)0 b)infinite c)1 ohm d)can`t say	V	CO1
1C7	An inductor stores energy in …….. a)magnetic field b)electric field c)electromagnetic field d) all	I	CO1
1C8	A capacitor stores energy in …….. a)magnetic field b)electric field c)electromagnetic field d)all	I	CO1
1C9	Mesh analysis mainly depends on…… a)kvl b)kcl c)kvl&kcl d)none	II	CO1
1C10	Nodal analysis mainly depends on …….. a)kvl b)kcl c)kvl&kcl d)none	II	CO1
1C11	Superposition theorem not valid for a)voltage response b)current response c)power response d)all the three	II	CO1
1C12	A practical voltage source consists of a)an ideal voltage source in series with internal resistance b) an ideal voltage source in parallel with internal resistance c)both d)none of the above	II	CO1
	FILL IN THE BLANKS	**BT Level**	**Course Outcome**
1F1	The _____ determines whether connected resistors are in series, parallel, or series parallel	II	CO1
1F2	If a 3.9 k Ω, a 7.5 k Ω, and a 5.6 k Ω resistor are connected in series with a 34 V source, the voltage dropped across the 7.5 k Ω resistor equals _____.	V	CO1
1F3	The polarity on the side of the resistor where current enters is _____. The polarity on the side of the resistor where current exits is _____.	III	CO1
1F4	A voltage divider is always a _____ circuit	I	CO1
1F5	If four 90 Ω resistors are connected in series across an 18 V source, the current equals_____.	V	CO1
1F6	Kirchhoff's current law is based on…….	II	CO1
1F7	To get Thevenins voltage, you have to……	V	CO1
1F8	To get Norton's current, you have to…….	III	CO1

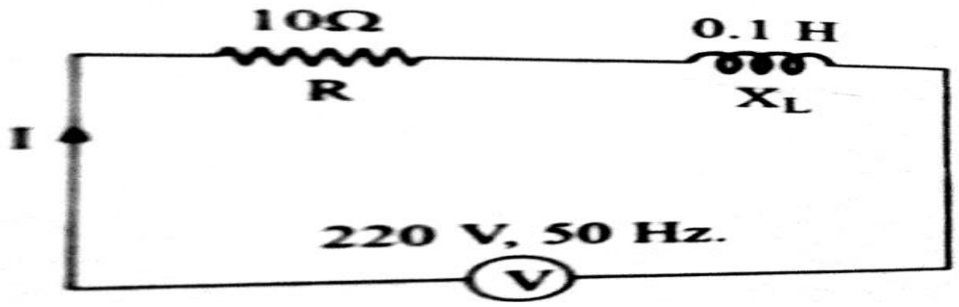
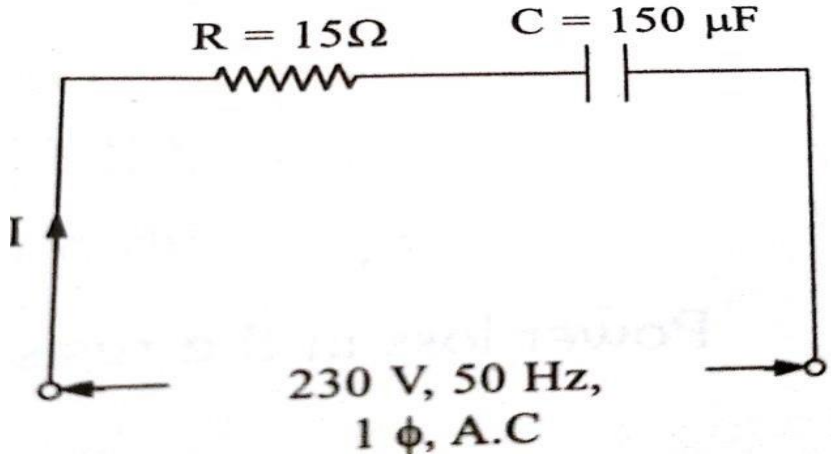
1F9	In a linear circuit the superposition theorem can applicable to calculate……..	II	CO1
1F10	Superposition theorem can be applied only to circuits having……	II	CO1
	MATCH THE FOLLOWING	**BT LEVEL**	**CO OUTCOME**
1M1	1.Electrical current a)watt 2.potential difference b)ohms 3.Resistance c)volt 4.Electrical power d)ampere	I	CO1
1M2	1.Active elements a)total current× opposite resistance/ total resistance 2.Passive elements b)R,L,C 3.Current division rule c)total voltage × resistance value/total Resistance 4.Voltage rule d)voltage source	III	CO1
1M3	1.V_L a)cv 2.I_L b)c dv/dt 3.I_C c) Ldi/dt 4.Q d) 1/L ∫ Vdt	I	CO1
	5 -MARK QUESTIONS		
1D1	a)Define Active elements. Explain about Energy Sources? b) Calculate the current in each branch of the circuit as shown in the following figure?  (DEC-2018)	V	CO1
1D2	a)State and explain Kirchhoff's laws?(JULY-2021,SEP-2021) b)Calculate the current flowing through 6ohm Resistor in the Network Show In Fig  	I,V	CO1
1D3.	a)State Thevenin's Theorem? b) Find the Thevenin's Equivalent circuit for the network shown in figure, and then find the current through 10ohm Resistor?	I	CO1

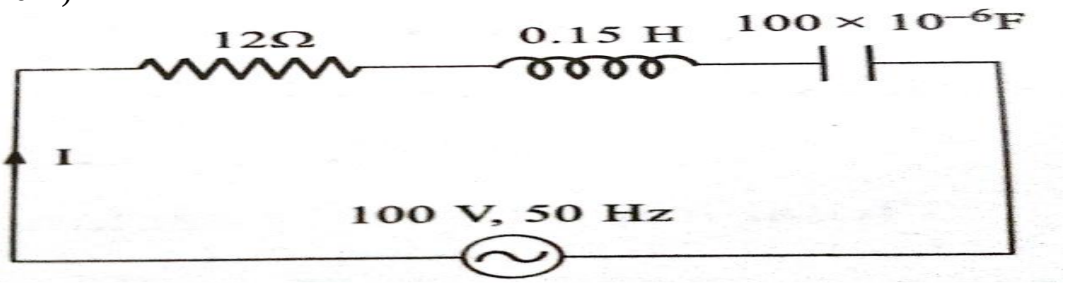
	 (SEP-2021)		
1D4.	a) Define active elements? b) Find the Currents through all branches in the circuit shown below?  (DEC-2018,SEP-2021)	II,V	CO1
1D5	A)State and Explain Norton's Theorem? b)Using Norton's theorem ,Find the current in 5ohm Resistor of the Network shown in figure?(JULY-2021) 	I,II	CO1
1D6	a)Define Junction , Branch and loop? b)Using Norton's Theorem find the current in the branch AB containing 15ohm resistor of the network shown in figure?(Remembering) 	I	CO1
1D7	a)State and Explain Superposition theorem? b)Determine the current in each branch of the network Shown in figure by using super	II,V	CO1

	position theorem?  (DEC-2018)		
1D8	a)Find the current flowing through 20ohm resistor of the network shown in figure by using superposition theorem? b)Explain the steps for solving a network problem using thevenin's theorem?  	II,V	CO1
1D9	Develop the Expression for Transient analysis of Series RL circuit with DC Excitation?(DEC-2018)	III	CO1
1D10	Develop the Expression for Transient analysis of Series RC circuit with DC Excitation?	III	CO1
	II UNIT AC CIRCUITS		
	OBJECTIVE QUESTIONS	**BT Level**	**Course Outcome**
2C1.	What is the condition for resonance……. a) phase angle is 90 lag b)phase angle is zero c)phase angle is 90 lead d)phase angle is 180	I	CO2
2C2.	Q –factor of a series resonant circuit is……. a)voltage/current b)voltage across L or C/Applied voltage c)power factor d) L/C	I	CO2
2C3.	) In a series RLC circuit R=2K ohm L=1H &C=2.5Nf ,the resonant frequency is …… a)1083HZ b) 2123 HZ c) 3183 HZ d)4123HZ	II	CO2
2C4.	In series resonant RLC circuit if frequency increases then resistance will ……. a)increases b) decreases c) remains constant d) none	V	CO2
2C5.	In a pure capacitor, the voltage a)is in phase with the current b)is out of phase with the current c)lags behind the current by 90 degrees d)leads the current by 90 degrees	III	CO2
2C6.	A series RL circuit has a resistance of 33 kilo ohms ,and an inductive reactance of 50 kilo	V	CO2

	ohms. What is its impedance and phase angle? a)56.58ohm,59.9deg b)59.9kilo ohm,56.58deg c)59.9ohm,56.58deg d)5.99ohm,56.58deg		
2C7.	Apparent power is expressed in a)volt-amperes b)watts c)volt-amperes or watts d)VAR	I	CO2
2C8	A power factor of 1 indicates a)purely resistive circuit, b)purely reactive circuit c)combination of both a and b d)none of those	II	CO2
2C9	For a series RLC circuit the power factor at lower half power frequency is …….. a)0.5 lag b)0.65 lead c) 0.707 lead d)unity	V	CO2
2C10	The relation between f0,f1 and f2 is a)f0=f1+f2 b)f0=f1-f2 c)f0square2=f1f2 d)f0=f1f2	III	CO2
2C11	The phasor combination of resistive power and reactive power a)true power b)apparent power c)reactive power d)average power	II	CO2
2C12	Unit for apparent power a)VA b)Watts c)VA or watt d)VAR	I	CO2
	FILL IN THE BLANKS	**BT Level**	**Course Outcome**
2F1	If the peak value of a certain sine wave voltage is 5v,what is the rms value----------	V	CO2
2F2	What is the average value of a sine wave over a full cycle----------	I	CO2
2F3	In a pure resistor, the voltage and current are---------	III	CO2
2F4	A sinusoidal current has peak value of 12A.What is its average value----------	V	CO2

2F5	Average value of sine wave over one sinusoidal function……..	V	CO2
2F6	A power factor of 1 indicates …….	II	CO2
2F7	In pure resistive circuit the power factor is……	V	CO2
2F8	In pure inductive circuit the power factor is…….	V	CO2
2F9	In pure capacitive circuit the power factor is…..	V	CO2
2F10	What is the condition for resonance----------	V	CO2
	MATCH THE FOLLOWING	**BT Level**	**Course Outcome**
2M1	1.V_{avg} a)1.11 2.V_{rms} b)$2V_m/\pi$ 3.Form factor c)$V_m/\sqrt{2}$ 4.peak factor d)1.414	III	CO2
2M2	1.Average power for inductor a)V in phase I 2.Relation V-I pure resistor b)V leads I by 90^o 3.Relation V-I Pure capacitor c)0 4.Relation V-I pure inductor d)I lags V by 90^0	III	CO2
2M3	1.Resonance a) f_0/Q 2.Bandwidth b)$G\Omega_0L/R$ 3.Quality factor c) f_0+_BW/2 4.cut off frequency d)$1/2\pi\sqrt{LC}$	III	CO2
	5-MARKS QUESTIONS	**BT Level**	**Course Outcome**
2D 1.	A) What is A.C ?How it differs from D.C? b)Sketch the sinusoidal alternating current waveform and define the following terms i) Instantaneous value ii) Waveform iii)Time period iv)Cycle v)Frequency vi)Amplitude or peak value or maximum value ?	I,V	CO2
2D 2.	A)Define and derive the equations for RMS value ,Average value,Form factor and peak Factor? b)Obtain the Form factor,peak factor of pure sine wave?(DEC-2018)	I	CO2
2D 3.	a) The equation of an alternating current is given by i=42.42 sin628t Calculate it's i) Maximum value ii)Frequency iii)R.M.S value iv)average value v)Form factor? b) What is phasor?How a rotating phasor represents an alternating quantity?	I	CO2
2D 4	a) State the equation of an alternating quantity? State it's various forms? b) Prove that the voltage and current in purely resistive circuit are in phase?	I,V	CO2
2D 5	a) Build the expressions for current and power for purely inductive circuit when the voltage applied to it is v(t)= Vmsinwt. Draw the corresponding wave forms?	III	CO2
2D6.	a) Show that the average power consumed by pure capacitor is Zero? b)An A.C circuit consists of a pure resistance of 20ohms and is connected across an A.C	I	CO2

	supply of 230v,50hz find i)current ii)Power consumed iii)sinusoidal equations for voltage and current?		
2D7.	a)A series RL circuit is Excited by Sinusoidal voltage .Find the Expression for an Impedance and power and draw the phasor diagram? b)A Resistance of 10ohm and inductance of 0.1H are connected in series across a supply of 220v,50Hz determine i)Impedance ii)Current flowing iii)Power Factor iv)the phase angle between V and I? (SEP-2021) 	I,V	CO2
2D8.	a)For A.C circuit consisting of R and C ,Draw the phasor diagram ,also derivethe expression for an impedance ,current and phase angle of the circuit? b)A non inductive Resistance of 15ohms is connected in series with a capacitor of 150micro farads capacitance across a 230v,50Hz single phase A.C supply. Calculate i)Impedance of the circuit ii)Current iii)Power Factor and phase angle iv)Power consumed in the circuit v)Equation for the Instantaneous value of current 	I,V	CO2
2D9.	a) Derive an Expression for the Resonance Frequency for an RLC seriescircuit? b)What do you understand by Real power , Reactive power and apparent power?	V	CO2
2D10	a)Sketch and Explain the Phasor diagram of RLC series circuit for i) $Xc>X_L$ ii)$Xc=X_L$	V	CO2

	iii)Xc<X_L and Find the Expression for an impedance ,power and phase angle of the circuit? b)A resistance of 12ohms ,an inductance of 0.15H and a capacitance of 100micro farads are connected in series across a 100volts , 50Hz supply .Calculate i)impedance ii)Current iii)Power Factor iv)Power Consumed?(DEC-2018,JULY-2021) 		
	UNIT-III TRANSFORMERS		
	OBJECTIVE QUESTIONS	**BT Level**	**Course Outcome**
3C1.	A transformer works on( ) a)DC b)AC c)AC&DC both d)Neither AC not DC	I	CO3
3C2.	The efficiency of a transformer is maximum when( ) a)Its run at half full load b)Its run at full load c)Reduce the eddy current losses d)Turn ratio is higher than voltage ratio	IV	CO4
3C3.	Transformer core is laminated to( ) a)Reduce the copper losses b)Reduce the core losses c)Reduce the eddy current losses d)Turn ratio is higher than voltage ratio	II	CO3
3C4	Transformer cores are laminated with( ) a)Low carbon steel b)silicon sheet steel c)Nickel alloy steel d)Chromium sheet steel	II	CO3
3C5	Transformer oil provides( ) a)Insulation and cooling b)Cooling and lubrication c)Lubrication and insulation d)Insulation, cooling and lubrication	II	CO3
3C6	Transformers are rated in KVA instead of KW because( ) a)load p.f is often not known b)KVA is fixed whereas KW depends on load p.f	I	CO4

	c)total transformer loss depends on volt-ampere d)it has become customary		
3C7	Which of following connection is best suitable for 3-phase,4-wire service( ) a)delta-delta b)star-star c)delta-star d)star-delta	V	CO4
3C8	Which of the following has the highest efficiency( ) a)DC shunt motor b)transformer c)induction motor d)synchronous motor	V	CO4
3C9	A DELTA-STAR connection of transformer is generally used when it is necessary to( ) a)step up the voltage b)step down the voltage c)maintains constant voltage d)all	V	CO4
3C10	Transformer is used( ) a)to step up the voltage b)to step down the voltage c)on dc d)to step up or step down the voltage	II	CO3
3C11	The primary winding of a transformer has a 120 V ac supply. What is the value of secondary voltage if the turn ratio is 10? a)120 V b)12 V c)12000 V d)1200 V	V	CO4
3C12	Lamination of the transformer core is made up of a)Aluminum b)Iron c)Steel d)Silicon steel	II	CO3
	FILL IN THE BLANKS	**BT LEVEL**	**CO OUTCOME**
3F1.	The basic function of transformer is to change----------	I	CO3
3F2	The efficiency of a power transformer is around----------	III	CO4

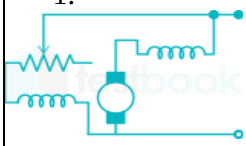
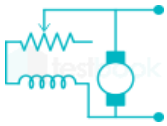
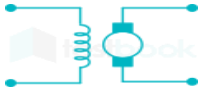
3F3	The conservator is used in a transformer because----------	II	CO3
3F4	A Delta-Star connection of transformer is generally used when it is necessary to--------	I	CO4
3F5	The voltage ratio of the transformer is given as----------	III	CO4
3F6	The inductive reactance of transformer depends on----------	V	CO4
3F7	The generation voltage is usually---------	I	CO4
3F8	The emf induced in the primary of a transformer---------	II	CO3
3F9	The efficiency of a transformer is mainly dependent on----------	I	CO4
3F10	No load current in a transformer----------	V	CO4
	MATCH THE FOLLOWING	**BT LEVEL**	**CO OUTCOME**
3M1	1.Emf equation a)(output/input)×100 2.Regulation b)V_2/V_1 3.Efficiency c)$4.44Nf\phi_m$ 4.Transformer ratio d)(no load-full load)/no load	V	CO4
3M2	1.Step up transformer a) $W_i=W_{cu}$ 2. Condition for maximum η b)$N_2>N_1$ 3.Step down Transformer c)EMF 4. principle of transformer d) $N_1>N_2$	II	CO3
3M3	1.W_e a)$\eta B_{max}^{1.6} fv$ 2.W_i b) $k_e B_{max}^2 f^2 t^2$ 3.W_{cu} c)W_e+W_h 4. W_h d)i^2r	V	CO4
	5- MARKS Questions	**BT Level**	**Course Outcome**
3D1.	What is a Transformer? Explain the constructional details of Transformer? (DEC-2018,JULY-2021)	1	CO3
3D2.	What is the principal involved in Transformer? Draw the Equivalent circuit of transformer?(DEC-2018)	I	CO3
3D3	a) Develop the EMF Equation of a Transformer? (DEC-2018,JULY-2021) b)A 500KVA , 11000v/400v ,500Hz Single phase Transformer has 100 turns on the secondary winding , Calculate the approximate value of the No. of Turns in Primary winding?	III,V	CO3
3D4	A single phase 50Hz Transformer has 100 turns on the primary winding and 400 turns on the secondary .The Net cross sectional area of the core is 250cm square .If the primary winding is connected to a 230v,50Hz supply, determine 1) Emf induced in the secondary winding 2)Maximum flux density in the core.(JULY-2021)	V	CO3
3D5	a) Define voltage Regulation of a Transformer? b) Explain about Efficiency of a Transformer? c)What are various losses occurring in transformer?(DEC-2018,JULY-2021)	I	CO3
3D6	A Single phase Transformer has 90 primary turns and 180 secondary turns .The primary and	I	CO3

	secondary winding resistances are 0.067ohms and 0.233ohms respectively. Find the equivalent resistance of a) The primary winding in terms of secondary winding b)The secondary winding in terms of primary winding c) The total resistance of the Transformer referred to primary winding?(DEC-2018,SEP-2021)		
3D7	Examine are the various losses occurring in transformer? Explain in detail?	IV	CO3
3D8	What is auto transformer? What are the specific uses of auto transformer over normal transformer?	I	CO3
3D9	What are ideal and practical transformers? Explain them in detail? Draw their phasor diagrams?SEP-2021	I	CO3
3D10	Develop Star-Star, Star-Delta, Delta-Delta, Delta-Star Connections of 3-phase transformers in detail?SEP-2021	III	CO3

UNIT-IV
ELECTRICAL MACHINES

	OBJECTIVE MARKS	BT LEVEL	CO OUTCOME
4C1.	Difference in speed between stator field and rotor is called ( ) a)Full load speed b) No load speed c)Slip d)Regulation	II	CO5
4C2.	The two important parts of an induction motor are( ) a)stator and rotor b)slip rings and brushing c)core& windings d)shaft and bearings	I	CO5
4C3.	When the motor runs at synchronous speed slip is a)one b)infinity c)zero d)two	II	CO5
4C4.	The most suitable servo motor for low power applications is( ) a)a DC series motor b)a DC shunt motor c)an AC two phase induction motor d)an AC series motor	I	CO5
4C5.	Why is the armature of a DC machine made of silicon steel stampings( ) a)to reduce eddy current loss b)to reduce hysteresis loss c)for ease with which the slots can be created d)to achieve high permeability	I	CO5
4C6.	Speed of the stator field of an induction motor is ……. a)synchronous speed b)any speed c) <synchronous speed d)slip speed	II	CO5

4C7.	Difference in speed between stator field & rotor is called….. a)full load speed b)no load speed c)slip d)regulation	V	CO5
4C8.	Frequency of current in rotor…… a)supply frequency b)< supply frequency c)> supply frequency d)slip times frequency	V	CO5
4C9.	Shape of the torque slip curve is…….. a)rectangular hyperbola b)parabola c)sine wave d)cosine wave	V	CO5
4C 10.	When the motor runs at synchronous speed slip is ….. a)one b)infinity c)zero d)two	V	CO5
4C 11	In case of the induction motors the torque is a) Inversely proportional to (V-slip) b) Directly proportional to $(slip)^2$ c)Inversely proportional to slip d)Directly proportional to slip	V	CO5
4C 12	The rotor of an induction motor runs at a)Synchronous speed b)Below synchronous speed c)Above synchronous speed d)Any of the above	II	CO5
	FILL IN THE BLANKS	**BT LEVEL**	**CO OUTCOME**
4F1	The commutator in a dc machine is to convert ----------	II	CO5
4F2	The principle of the DC motor works on----------	I	CO5
4F3	Which material is used for construction of stator core ----------	I	CO5
4F4	Shape of the torque slip curve is----------	II	CO5
4F5	An induction motor works with----------	I	CO5
4F6	Slip of the induction machine is 0.02 & the stator supply is 50 hz .what will be the frequency of the rotor induced emf……..	V	CO5
4F7	The rotor frequency of a 3 phase 1000rpm 6 pole induction motor with a slip of 0.04 is ….. hz	V	CO5
4F8	Which material is used for construction of stator core is ……..	II	CO5
4F9	Which material is used for construction of slip rings……	II	CO5
4F10	The frequency generated in a 8 pole alternator that rotates at 750 rpm is……..	V	CO5
	MATCH THE FOLLOWING	**BT LEVEL**	**CO OUTCOME**

4M 1	1.Synchronous Speed 2.Torque 3.Rotor speed 4.slip	a)$(N_s-N_r)/N_s$ b)120f/p c)$KE_2I_2\cos\phi_2$ d)sf	V	CO5
4M 2	$E_b=P\phi NZ/60A$ 1.E_b 2.A 3.Z 4.ϕ	a) flux b)number of conductors c)number of parallel paths d)back emf	V	CO5
4M 3	1.  2.  3.  4. 	A)series motor b)compound motor c)shunt motor d)separately excited motor	I	CO5

	5- MARK QUESTIONS	BT LEVEL	CO OUTCOME
4D1	What are the types of induction motors? Explain in detail?(JULY-2021)	I	CO5
4D2	Write the similarities and Dissimilarities between Transformer and Induction motor?	II	CO5
4D3	Explain construction and working of Alternator with diagram?(JULY-2021)	I	CO5
4D4	a)Explain why an induction motor cannot run at synchronous speed?(DEC 2018) b) A Three phase 50Hz, 4-pole Induction motor runs at a slip of 4%at full load. Calculate rotor speed ?(JULY-2021)	I,II	CO5
4D5	a)What is slip? Explain in detail? b) A 12-pole,50Hz Three-phase Induction motor runs at 485rpm .What will be the frequency of rotor current?(DEC-2018,JULY-2021)	I	CO5
4D6	What is the significance and various factors determine the Torque –slip characteristics? (SEP-2021)	I	CO5
4D7	With the help of neat diagram explain how the RMF is developed in an Induction motor? (DEC-2018)	IV	CO5
4D8	Distinguish the types of single phase Induction motors?SEP-2021	IV	CO5
4D9	Determine the Torque-speed characteristics and Explain in detail about speed control of separately Excited DC Motor? (DEC-2018,JULY-2021)	V	CO5

4D10	Classify various losses occurring in an induction motor? Explain them in detail?	IV	CO5
	UNIT-V ELECTRICAL INSTALLATIONS		
	OBJECTIVE QUESTIONS	**BT Level**	**Course Outcome**
5C1	A Fuse in a motor circuit provides protection against…… a)short circuit b)over load c)open circuit d)both a |& b	I	CO6
5C2	The fuse blows off by…… a)arcing b)burning c)melting d)any one of the above	I	CO6
5C3	The ground wire is coloured……. a)yellow b)red c)black d)green	I	CO6
5C4	In equipment grounding the enclosure is connected to……..wire a)ground b)neutral c)both d) none	I	CO6
5C5	the lagging power factor is due to …….power drawn by the circuit a)active b)reactive c)apparent d)none	V	CO6
5C6	The material used for the fuse wire should be a)low resistivity and high melting point b)high resistivity and high melting point c)high resistivity and low melting point d)low resistivity and low melting point	II	CO6
5C7	The most economical power factor for a consumer is generally a)0.5lagging b)0.8 lagging c)unity d)0.95 lagging	V	CO6
5C8	The maximum value of power factor can be a)0.5 b)0.8 c)1 d)infinity	V	CO6
5C9	Type of circuit breaker a)fuse b)DCC c)MCCB d)shunt capacitor	I	CO6
5C1	Heat generated in HRC fuse is dissipated mainly through	II	CO6

0	a)radiation b)convection c)conduction d)all the above		
5C11	What are oil switches used for a)high voltage and large circuits b)low current supply c)low current circuits d)low voltage circuits	II	CO6
5C12	SF_6 are preferred for the substation a)33kv b)11kv c)110kv d)220kv	II	CO6
	FILL IN THE BLANKS	**BT LEVEL**	**CO MAPPING**
5F1	Primary cell generally used for ……..	I	CO6
5F2	The positive plate of lead acid cell is ……	I	CO6
5F3	The neutral wire is colored……	II	CO6
5F4	A material best suited for the manufacture of the fuse is …….	I	CO6
5F5	The maximum value of power factor can be-----	III	CO6
5F6	Write any two types of cables----	I	CO6
5F7	Examples of secondary batteries-----	I	CO6
5F8	When the Fuse is blown out ----	IV	CO6
5F9	Where the pipe earthing preferable----	I	CO6
5F10	If a bare conductor is provided insulation it is known as-----	I	CO6
	MATCH THE FOLLOWING	**BT LEVEL**	**CO OUTCOME**
5M1	1. Switch — a) Safety device used in electric circuit. 2. Circuit — b) Reset by hand, circuit becomes complete once again. 3. MCB — c) path of the flow of an electric current 4. Fuse — d)Used to open or close a circuit	I	CO6
5M2	1.Plate earthing — a) Large installations such as transmission towers 2.Pipe earthing — b)rocky area 3.Rod earthing — c) In areas where the soil is loose or sandy 4.Strip earthing — d) For 11kV/400V distribution transformers	I	CO6
5M3	1.MCB — a)earth leakage circuit breaker 2.ELCB — b)molded case circuit breaker 3.MCCB — c)air blast circuit breaker 4.ACB — d) miniature circuit breaker	I	CO6
	5 MARKS QUESTIONS	**BT LEVEL**	**CO OUTCOME**
1	Explain in detail about Switch gear and various components involved in it? (DEC-2018)	II	CO6
2	What are SFU, MCB, MCCB ?Explain them in detail?JULY-2021	I	CO6
3	Develop a neat diagram showing the various parts of ELCB and explain? JULY-2021	III	CO6
4	Examine about underground cables? Compare the merits and Demerits of Underground system	IV	CO6

	verses overhead system? JULY-2021		
5	What do you mean by Grounding or Earthing? Explain it with an example? Explain different types of grounding?	I	CO6
6	Compare different types of grounding? And give their Advantages and Disadvantages?	IV	CO6
7	Explain in detail about Batteries and Types of Batteries?(DEC-2018,SEP-2021)	II	CO6
8	What is meant by Batteries? Explain the Characteristics of Batteries? JULY-2021	II	CO6
9	Explain in Detail about Power Factor? What is the importance of power factor Improvement?(DEC-2018,JULY-2021)	II	CO6
10	10. Discuss the various methods for Power Factor Improvements?(DEC-2018)	VI	CO6

SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY

(An Autonomous Institution under UGC/ New Delhi) - Recognized under 2(f) and 12(B) of UGC Act 1956

I B.Tech. I Semester End Examination- Model Paper 2022-23

BASIC ELECTRICAL ENGINEERING

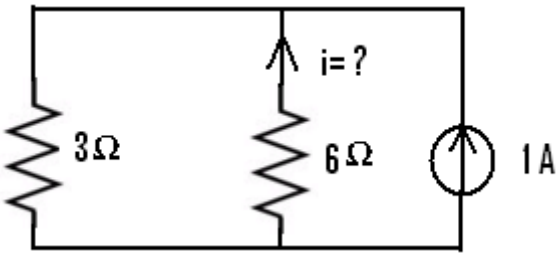
(R22EEE1101)

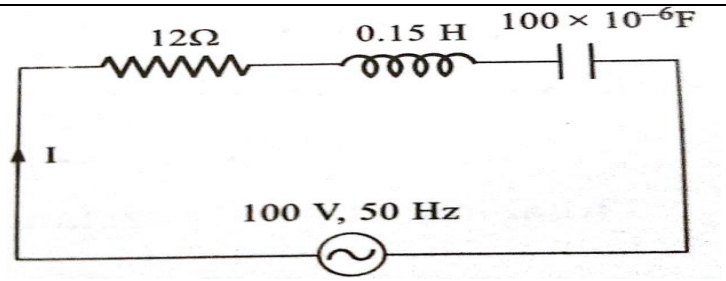
(Common to CSE,CS,DS,CSIT,IT)

Duration: 3 Hrs **Maximum Marks: 60 M**

Blooms Taxonomy : (I-Remembering / II-Understanding / III-Applying / IV-Analyzing / V-Evaluating / VI-Creating).

Course Outcomes : CO.

PART – A				**(10Q x 1M = 10Marks)**	
Answer ***All*** Questions			**Marks**	**Course Outcomes**	**BT Levels**
1	**A**	Define KVL and KCL with examples?	**1**	**CO1**	**I**
	B	State Superposition theorem?	**1**	**CO1**	**II**
	C	What is meant by peak value of sinusoidal waveform?	**1**	**CO2**	**II**
	D	Define Frequency.	**1**	**CO2**	**I**
	E	What is the condition for maximum efficiency?	**1**	**CO3**	**V**
	F	What is the regulation of a transformer?	**1**	**CO4**	**II**
	G	Define Back EMF.	**1**	**CO5**	**II**
	H	What are the merits and demerits of induction motor?	**1**	**CO5**	**I**
	I	What is meant SFU?	**1**	**CO6**	**I**
	J	Explain Operating Principle of DC Motor.	**1**	**CO6**	**IV**
PART – A				**(5Q x 10M = 50Marks)**	
Answer ***All*** questions choosing ***ONE*** from each unit					
2	**UNIT-I** 1. **A**. How do you find out thevenin's resistance? **(Or)** **B.** Find the current 'i' in the circuit below figure 1.  		**10**	**CO1** **CO1**	**II** **III**
3	**UNIT-II** **2.A)**Explain transient analysis for RL circuit ***(or)*** **B)** A resistance of 12ohms ,an inductance of 0.15H and a capacitance of 100micro farads are connected in series across a 100volts , 50Hz supply .Calculate i)impedance ii)Current iii)Power Factor iv)Power Consumed		**10**	**CO2** **CO2**	**III** **V**

				
4	**UNIT-III** **3.A)** Derive the condition for maximum efficiency in a single phase transformer ***(or)*** **B**)A single phase 50Hz Transformer has 100 turns on the primary winding and 400 turns on the secondary .The Net cross sectional area of the core is 250cm square .If the primary winding is connected to a 230v,50Hz supply, determine 1) Emf induced in the secondary winding 2)Maximum flux density in the core	**10**	**CO4** **CO3**	**II** **III**
5	**UNIT-IV** **4A)** 3-phase, 60 Hz induction motor has 2 poles. If the slip is 2% at a certain load.determine: i) The synchronous speed. ii) The speed of the rotor. iii) The frequency of the induced e.m.f.'s in the rotor. ***(or)*** **B)** .Explain the working principle of single phase induction motor.	**10**	**CO5** **CO5**	**V** **II**
6	**UNIT-V** **5A**) What is meant by Batteries? Explain the Characteristics of Batteries ***(or)*** **B**)What are the ways of improving battery backup	**10**	**CO6** **CO6**	**II** **II**

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BR-22 **SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY** D4

I B.Tech - I Semester - I Mid Term Examination, December – 2022

(R22EEE1114) BASIC ELECTRICAL ENGINEERING

(For CSE, CS, DS, CSIT & IT)

Duration: 2 Hrs **Dt: 31-12-2022, Day-2 (AN)** **Max Marks: 30M**

Part – A

Answer *All:* multiple choice questions. **Marks: 10Qx1/2M = 5M**

* (L1-Remembering, L2-Understanding, L3-Applying, L4-Analyzing, L5-Evaluating, and L6-Creating.)

		*Blooms Taxonomy Levels	Course Outcomes
1.	Kirchhoff's laws are useful in determining. [ ] A) Current flowing in a circuit B) EMFs and Voltage drops in a circuit C) Power in a circuit D) All the above.	II	CO1
2.	Three resistance 14.5 Ω, 25.5 Ω and 60 Ω are connected in series across 200 V. What will be the voltage drop across 14.5 Ω. [ ] A) 29 V B) 13.5 V C) 14 V D) 18 V.	V	CO1
3.	A capacitor stores energy in …….. [ ] A) Magnetic field B) Electric field C) Electromagnetic field D) All.	I	CO1
4.	Nodal analysis mainly depends on …….. [ ] A) kvl B) kcl C) kvl&kcl D) none.	II	CO1
5.	Q –factor of a series resonant circuit is…… [ ] A) Voltage/current B) Voltage across L or C/Applied voltage C) Power factor D) L/C.	I	CO2
6.	In series resonant RLC circuit if frequency increases then resistance will ……. [ ] A) increases B) decreases C) Remains constant D) none.	V	CO2
7.	A power factor of 1 indicates. [ ] A) Purely resistive circuit B) Purely reactive circuit C) Combination of both a and b D) None of those.	II	CO2
8.	The phasor combination of resistive power and reactive power. [ ] A) true power B)apparent power C) reactive power D) Average power.	II	CO2
9.	The efficiency of a transformer is maximum when. [ ] A) Its run at half full load B) Its run at full load C) Reduce the eddy current losses D) Turn ratio is higher than voltage ratio.	IV	CO4
10.	Transformer cores are laminated with. [ ] A) Low carbon steel B) Silicon sheet steel C) Nickel alloy steel D) Chromium sheet steel.	II	CO3

P.T.O.

Answer *All:* fill in the blank questions. **Marks: 6Qx1/2M =**

11. The polarity on the side of the resistor where current enters is _____. The polarity on the side of the resistor where current exits is _____. III C
12. Kirchhoff's current law is based on_____. II C
13. To get Norton's current, you have to_____. III C
14. If the peak value of a certain sine wave voltage is 5v, what is the rms value---------- . V C
15. In pure resistive circuit the power factor is…… . V C
16. The efficiency of a power transformer is around---------- . III C

Answer *All:* Match the following questions. **Marks: 2Qx1M =**

17. I C

a) Electrical current	i) watt
b) potential difference	ii) ohms
c) Resistance	iii) volt
d) Electrical power	iv) ampere

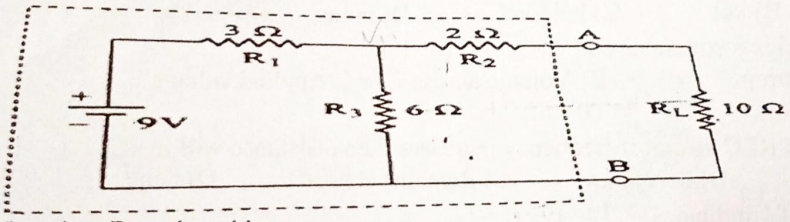
18. III C

a) Average power for inductor	i) V in phase I
b) Relation V-I pure resistor	ii) V leads I by 90^{o}
c) Relation V-I Pure capacitor	iii) 0
d) Relation V-I pure inductor	iv) I lags V by 90^{0}

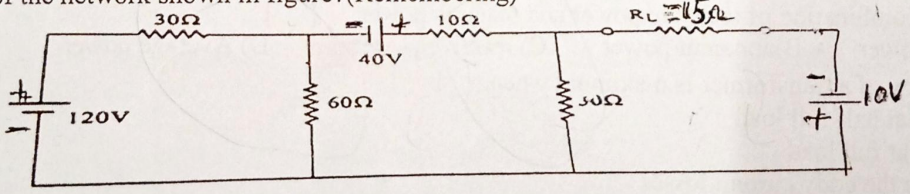
Part – B

Answer any *FOUR* questions. **Marks: 4Qx5M = 2**

19. a) State Thevenin's Theorem. I C
    b) Find the Thevenin's Equivalent circuit for the network shown in figure, and then find the current through 10ohm Resistor. I C



20. a) Define Junction, Branch and loop. I C
    b) Using Norton's Theorem find the current in the branch AB containing 15ohm resistor of the network shown in figure?(Remembering) I C



21. Develop the Expression for Transient analysis of Series RC circuit with DC Excitation? III C
22. a) Define and derive the equations for RMS value, Average value, Form factor and peak Factor. I C
    b) Obtain the Form factor, peak factor of pure sine wave. I C
23. a) Derive an Expression for the Resonance Frequency for an RLC seriescircuit. V C
    b) What do you understand by Real power, Reactive power and apparent power? V C
24. What is a Transformer? Explain the constructional details of Transformer. I C

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