

SKIT

Title:

Ref No:

SRI KRISHNA INSTITUTE OF TECHNOLOGY, BANGALORE



COURSE PLAN

Academic Year 2019-20

Program:	B E – Electronics and Communication Engineering
Semester :	3
Course Code:	18EC32
Course Title:	Network Theory
Credit / L-T-P:	4 / 4-0-0
Total Contact Hours:	50
Course Plan Author:	M.NAGARAJA

Academic Evaluation and Monitoring Cell

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2. Conce	epts and Outo	comes:	

Note : Remove "Table of Content" before including in CP Book

Each Course Plan shall be printed and made into a book with cover page

Blooms Level in all sections match with A.2, only if you plan to teach / learn at higher levels

18EC32 : Network Theory

A. COURSE INFORMATION

1. Course Overview

Degree:	B.E	Program:	ECE
Year / Semester :	3 rd	Academic Year:	2019-20
Course Title:	Network Theory	Course Code:	18EC32
Credit / L-T-P:	50-10-0	SEE Duration:	180 Minutes
Total Contact Hours:	60	SEE Marks:	75 Marks
CIA Marks:	60	Assignment	1 / Module
Course Plan Author:	M.Nagaraja	Sign	Dt:
Checked By:		Sign	Dt:

2. Course Content

Mod	Module Content	Teaching	Module	Blooms
ule		Hours	Concepts	Level
1	Practical sources, source transformation, network reduction	13	Transformatio	L4
	using star-delta transformations,loop and node analysis		ns	
	with linearly dependent and independent sources for DC		loop and node	
	and AC networks,concepts of super node and super mesh		analysis	
2	Superposition,Reciprocity, Millman's theorems, Thevini's	15	Network	L4
	and Norton's Theorems ,Maximum power transfer theorem		Theorems	
3	Behavior of circuit elements under switching condition and	10	Circuit	L4
	their representation, evaluation of initial and final conditions		Switching	
	in RL,RC and RLC circuits for AC and DC excitations		s-domain	
	Solutions of networks ,step,ramp and impulse response,		analysis	
	waveform synthesis			
4	Series and parallel resonance, frequency response of series	10	Resonance	L3
	and parallel circuits , q-factor ,bandwidth			
5	Definition of Z,Y,h and Transmission parameters, modeling	12	Network	14
	with these parameters,relationship between parameters sets		Modeling	
6				

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Modul	Details	Chapters	Availablity
es		in Book	
Α	Text books (Title, Authors, Edition, Publisher, Year.)		-
1,2,3,	Text books - M.E Van Valkenberg " Network analysis"		In Lib
4,5			
	Roy choudhury – "Networks and systems"		In Lib
В	Reference books (Title, Authors, Edition, Publisher, Year.)	-	-
1	Reference books - Hayt,kemmerly and durbin" Engineering circuit		
	J.David Irwin " Basic Engineering circuit Analysis"		In dept
	Charles k Alxander and Mathew sadiku "Fundamentals of Electric		
	circuits		
С	Concept Videos or Simulation for Understanding	-	-
	https://www.youtube.com/watch?v=b_ct7xMtKMI Network Theory		
	https://www.youtube.com/watch?v=qFcuovfgPTc Network		
	Introduction		
	https://www.youtube.com/watch?v=LiaQjqYa8R0 Resonance		
	https://www.youtube.com/watch?v=pn777Ya0OHk 2 port Network		
	https://www.youtube.com/watch?v=gk7HNFBXi_c Initial conditions		
D	Software Tools for Design		
	PSPICE, SPICE, ORCAD		
E	Recent Developments for Research	-	-
	The topics of recent developments in Network theory include the compound matrices in network theory; the synthesis of		
	linear three-terminal networks composed of two kinds of		
	elements; the flow-graph and signal flow-graph analysis of		
	linear systems; the non-linear circuit theory by the methods of		
	classical dynamics; and the search for a complete set of basic		
	elements for the synthesis of non-linear electrical systems		
F	Others (Web, Video, Simulation, Notes etc.)	-	-
1	Network theory conceps Materials Gate		
	https://testbook.com/blog/basic-network-theory-concepts-gate-		
	study-material-pdf/		
2	Network Theory Made Easy study material for GATE, IES, PSUs exam preparation in the form of handwritten notes. https://easyengineering.net/network-theory-made-easy/		
	1		

4. Course Prerequisites

Refer to GL01. If prerequisites are not taught earlier, GAP in curriculum needs to be addressed. Include in Remarks and implement in B.5.

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Students must have learnt the following Courses / Topics with described Content . . .

Mod	Course	Course Name	Topic / Description	Sem	Remarks	Blooms
ules	Code					Level
1	ELE15	Basic Electrical	Network Laws	1		L2
2	ELE15	Basic Electrical	Electric Motors	1		L2
3	ELE15	Basic Electrical	Network Elements	1		L2
4						
5						

5. Content for Placement, Profession, HE and GATE

The content is not included in this course, but required to meet industry & profession requirements and help students for Placement, GATE, Higher Education, Entrepreneurship, etc. Identifying Area / Content requires experts consultation in the area.

Topics included are like, a. Advanced Topics, b. Recent Developments, c. Certificate Courses, d. Course Projects, e. New Software Tools, f. GATE Topics, g. NPTEL Videos, h. Swayam videos etc.

Mod	Topic / Description	Area	Remarks	Blooms
ules				Level
1	Network reduction techniques	Electrical		L2
2	Network Theorems	Network		L3
		Analysis		
3	Initial Conditions	Network		L3
		Analysis		
4	Laplace Transformation	Network		L2
		Analysis		
5	2 port network and Resonance	Filter		L3

B. OBE PARAMETERS

1. Course Outcomes

Module	CO#	Cos	Teach	Concept	Instr	Assessme	Blooms'
		At the end of the course,			Method	nt Method	Level
		student should be able to	Hours				
1	18EC32.	Reduce the circuit complexity	13	Transform	Lecture	CIA	L4
	1	and apply Kirchhoff's laws to	1	ation		Assignme	Analyze
		solve the network.		loop and		nt	
				node			
				analysis			
2	18EC32.	Solve network problems by using	15	Network	Lecture	CIA	L4
	2	principle of theorems		Theorems		Assignme	Analyze
						nt	

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3		Calcul	ate current	t and volt	ages of	05	Circuit	Lecture	CIA	L4		
	18EC32.	a n	etwork 1	to und	erstand		switching		Slip Test	Analyze		
	3	switch	ing analys	sis of n	etworks				Assignme			
		by so	olving inte	egro- dit	ffrential				nt			
		equati	ons									
4		Apply	Laplace tra	ansform 1	to solve	05	S-domain	Lecture	Assignme	L4		
	18EC32.	netwo	rk problem	ıs			analysis	/ PPT	nt	Analyze		
	4								CIA			
5		Evalua	te RLC	elemer	nts in	10	Resonance	Lecture	CIA	L4		
	18EC32.	Reson	ant circuits	5.					Assignme	Analyze		
	5								nt			
5	18EC32.	Apply	two	port r	network	12	Network	Lecture	Assignme	L4		
	6	param	eters to	solve	given		Modeling	and	nt	Analyze		
		netwo	rk.					Tutorial				
	-		То	tal		60	-	-	-	-		

Note: Identify a max of 2 Concepts per Module. Write 1 CO per concept.

2. Course Applications

SNo	Application Area	CO	Level
1	Protection of power systems	CO1	L4
2	Audio power amplifiers, Transmission line drive calculation	CO2	L4
3	Multistage wide band amplifiers,Power flow algorithms	CO3	L4
4	Linear dynamical systems	CO4	L4
5	Tuning radio and audio receivers,	CO5	L2
6	Reciprocal networks	CO6	L2
7		C07	L3
8		CO8	L2
9		CO9	L2
10		CO10	L4

Note: Write 1 or 2 applications per CO.

3. Mapping and Justification

CO - PO Mapping with mapping Level along with justification for each CO-PO pair.

To attain competency required (as defined in POs) in a specified area and the knowledge & ability required to accomplish it.

Mod	d Mapping Mapp		Mappin	in Justification				
ules			g Level					
	СО	РО	-	-	-			
1	C01	PO1	L3	Students will be able to learn and apply all the basic equations of maths, physics and its importance in network analysis	L3			
1	CO1	PO2		Students will be able to analyze, evaluate and design				

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			L4	solutions to solve complex engineering problems economically feasible and socially acceptable	for that ,	L4		
1	CO	I PO5	L4	Offer engineering solutions by usage of modern to meet needs of people.	ools to	L4		
1 CO2 PO1		L3	Students will be able to learn and apply all the bas equations of maths, physics and its importance in analysis	L3				
1	CO	2 PO2	L4	Students will be able to analyze, evaluate and des solutions to solve complex engineering problems economically feasible and socially acceptable	Students will be able to analyze, evaluate and design solutions to solve complex engineering problems for that , economically feasible and socially acceptable			
1	CO	2 PO5	L4	Offer engineering solutions by usage of modern to meet needs of people.	ools to	L4		
2	CO	3 PO1	L3	Students will be able to learn and apply all the bas equations of maths, physics and its importance in analysis	sic network	L3		
2	CO3 PO2 Students will be able to analyze, evaluate and design L4 solutions to solve complex engineering problems for that , economically feasible and socially acceptable					L4		
2	CO	3 PO5 L4 Offer engineering solutions by usage of modern tools to meet needs of people.						
3	CO4	4 PO1	L3	Students will be able to learn and apply all the bas equations of maths, physics and its importance in analysis	sic network	L3		
3	CO4	4 PO2	L4	Students will be able to analyze, evaluate and des solutions to solve complex engineering problems economically feasible and socially acceptable	ign for that ,	L4		
3	CO4	4 PO5	L4	Offer engineering solutions by usage of modern to meet needs of people.	ools to	L4		
4	CO	5 PO1	L3	Students will be able to learn and apply all the bas equations of maths, physics and its importance in analysis	sic network	L3		
4	CO	5 PO2	L3	Students will be able to analyze, evaluate and des solutions to solve complex engineering problems economically feasible and socially acceptable	ign for that ,	L3		
4	CO	5 PO5	L3	Offer engineering solutions by usage of modern to meet needs of people.	ools to	L3		
5	CO	5 PO1	L3	Students will be able to learn and apply all the bas equations of maths, physics and its importance in analysis	sic network	L3		
5	5 CO6 PO2 L4 Solutions to solve complex engineering problems for that , economically feasible and socially acceptable					L4		
5	5 CO6 PO5 L4 Offer engineering solutions by usage of modern tools to					L4		

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				meet needs of people.	

Note: Write justification for each CO-PO mapping.

4. Articulation Matrix

CO – PO Mapping with mapping level for each CO–PO pair, with course average attainment

	-	Course Outcomes	Program Outcomes												
Module	CO#	Cos	PO L									Leve			
		At the end of the course	1	2	3	4	5	6	7	8	9	10	11	12	- I
		student should be able to .													
		••													
1	C 18EC32.1	Reduce the circuit complexity	3	3	-	-	2	-		-	-	-	-	-	L3
		and apply Kirchhoff's laws to													
		solve the network.													
2	C 18EC32.2	Solve network problems by	3	3	-	-	2	-	-	-	-	-	-	-	L4
		using principle of theorems													
3	C 18EC32.3	Calculate current and voltages	3	3	-	-	2	-	-	-	-	-	-	_	L4
		of a network to understand													
		switching analysis of	-												
		networks by solving integro-													
		diffrential equations													
4	C 18EC32.4	Apply Laplace transform to	3	3	-	_	2	_	-	-	-	_	-	_	L4
		solve network problems													
5	C 18EC32.5	Evaluate RLC elements in	3	3	-	_	2	_	-	_	-	_	-	_	L3
		Resonant circuits.													
5	C 18EC32.6	Apply two port network	3	3	-	_	2	_	-	_	-	_	-	_	L4
		parameters to solve given													
		network.													
	Average at	ttainment (1, 2, or 3)	1	I	1		1		1	I	1				
	PO, PSO 1.En	ngineering Knowledge; 2.Problem And	alysi	s; 3.	Desi	ign /	Dev	relop	omen	t of	Solu	tion	s; 4.	Cond	duct
	Investigations	of Complex Problems; 5.Modern Too	l Us	age;	6.T	he E	ngin	eer i	and	Soci	ety;	7.En	viro	nme	nt
	Finance: 12.L	illy, o.Linics; 9.Inaiviauai and Ieam ife-long Learning; S1.Software Engin	wori eeri	к; 10 ng: S	52.D	nmu ata 1	nica Base	Ma	, 11. nage	r roj emen	eci I it; S2	viano 3.We	ugen b De	ient zsigr	ana 1

5. Curricular Gap and Content

Topics & contents not covered (from A.4), but essential for the course to address POs and PSOs

Modu	I Gap Topic	Actions Planned	Schedule Planned	Resources Person	PO Mapping
le					
1	Basic Network Laws	Seminar	Sept 19	Faculty	

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1	Basic Network	Seminar	Sept 19	Faculty	
	reduction techniques				
1	Polar to rectangular	Seminar	Oct 19	Faculty	
	and vice versa				
2	Solving simultaneous	Seminar	Oct 19	Faculty	
	equations using Matrix				
	Method				
5					

Note: Write Gap topics from A.4 and add others also.

6. Content Beyond Syllabus

Topics & contents required (from A.5) not addressed, but help students for Placement, GATE, Higher Education, Entrepreneurship, etc

SNo	Gap Topic	Actions Planned	Schedule Planned	Resources Person	PO Mapping
1	Network Simulation	Lab Practice	OCT 19	Faculty	
2	Filter Design	Seminar	OCT 19	Faculty	
3	Notch Filter Design	Seminar	OCT 19	Faculty	
4	H-parameter analysis	Seminar	OCT 19	Faculty	
5					
6					
7					
8					
9					
10					

Note: Anything not covered above is included here.

C. COURSE ASSESSMENT

1. Course Coverage

Assessment of learning outcomes for Internal and end semester evaluation. Distinct assignment for each student. 1 Assignment per chapter per student. 1 seminar per test per student.

Mod	Title	Teaching		No. of question in Exam				CO	Levels	
ule		Hours	CIA-	CIA-	CIA-	Asg	Extra	SEE		
#			1	2	3		Asg			
1	Basic concepts	13	2	-	-	1	1	2	CO1	L4

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2	Network Theorems			15	2	-	-	1	1	2	CO2	L4	
3	Transient behavior and initial		10	-	2	-	1	1	2	CO3	L4		
	condit	ions									CO4		
	Laplace transformation and												
	applications												
4	Resonant circuits		10	-	2	-	1	1	2	CO5	L3, L4		
5	Two port network parameters		12	-	-	4	1	1	2	CO6	L4		
-		Tota	l	60	4	4	4	5	5	10	-	-	

Note: Distinct assignment for each student. 1 Assignment per chapter per student. 1 seminar per test per student.

2. Continuous Internal Assessment (CIA)

Assessment of learning outcomes for Internal exams. Blooms Level in last column shall match with A.2.

Evaluation	Weightage in Marks	СО	Levels
CIA Exam - 1	30	CO1, CO2, CO3, CO4	13, 14
CIA Exam - 2	30	CO5, CO6, CO7, C08	L3, L4
CIA Exam - 3	30	CO9, CO10	L3, L4
Assignment – 1	05	CO1, CO2, CO3, CO4	L3, L4
Assignment – 2	05	CO5, CO6, CO7, CO8	L3, L4
Assignment – 3	05	CO9, CO10	L3, L4
Other Activities – define		CO1 to Co9	L2, L3, L4
– Slip test			
Final CIA Marks	40	-	-

Note : Blooms Level in last column shall match with A.2 above.

D1. TEACHING PLAN - 1

Module – 1

Title:	Basic concepts	Appr	16 Hrs
		Time:	
а	Course Outcomes	-	Blooms
-	The student should be able to:	-	Level
1	Reduce the circuit complexity and apply Kirchhoff's laws to solve the network.	CO1	L4

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b	Course Schedule	-	_
Class	Module Content Covered	CO	Level
No			
	Introduction to Network analysis	COT	L2
2	Practical sources	CO1	L3
3	Source Transformations and numericals	CO1	L4
4	Star delta and delta to star transformations and numericals	CO1	L4
5	Concept of KVL and Kcl and simple examples	CO1	L4
6	Numerical on loop analysis	CO1	L4
7	Numericals on loop analysis	CO1	L4
8	Numericals on node analysis	CO1	L4
9	Numericals on node analysis	CO1	L4
10	Concept of super mesh and super node analysis	CO1	L4
11	Numericals on super mesh analysis	CO1	L4
12	Numericals on super node analysis	CO1	L4
13	Class test		
14			
15			
16			
С	Application Areas	CO	Level
1	Protection of power systems	CO1	L4
2			
d	Review Questions	_	_
1	List the differences between linear and nonlinear circuits, Active and	CO1	L1
	passive elements.		
2	Derive the expression for star to delta and delta to star	CO1	L3
	transf		
3		CO2	L2
	Convert the network into single wotlage source using source		
	transformations		

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Copyright ©201	7. cAAS. All rights reser	valent resistance at terminlas a and b in the networks.	CO2	L4
5	Find voltage v	across 3ohms using nodal analysis	CO2	L2
6	Using source t 50v source.	transformation find the power deliverd to the load by	CO2	L5
7	Find the currer	t through each branch by network reduction technique. 32 42 42 42 42 42 42 42 4	CO2	L2
8	Calculate a) the b) total current source and c) p figure $100 \lor \frac{+}{100}$	e equivalent resistances across the terminals of the supply, supplied by the bower delivered to 16 ohm resistor in the circuit shown in $\frac{\sqrt{2}}{\sqrt{2}} + \frac{\sqrt{2}}{\sqrt{2}} + \sqrt{$	CO2	L3
9	In the circuit sh the total current battery. Use laws.	iown, determine the current through the 2 ohm resistor and t delivered by the Kirchhoff's	CO2	L4

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10	Determine the r	mesh currents I1 and I2 for the given circuit shown below	CO1	L1
	v ₁ = 30			
11	Determine	$- \uparrow I_1 \leftarrow J I_2 \leftarrow \uparrow I_3 \leftarrow \uparrow \uparrow +$	CO1	L4
	the value of V2 zero.	such that the current through the impedance $(2+j3)$ ohm is		
12		Use Nodal Voltage		
	the power di shown in th t	method and find ssipated in the 10 Ω resistance on the circuit fig		
	Асч	$+ \frac{1}{2} \frac{5.2}{2} \frac{3}{3}$ $+ \frac{1}{2} \frac{7}{2} \frac{10.2}{3} \frac{3}{154}$ $+ \frac{1}{2} \frac{7}{2} \frac{10.2}{3} \frac{10.2}{154}$		
13	Given the node / V2	s 1 and 2 in network of figure, Find the ratio of voltage V1 $V_g $ $V_g $ V		
14	Given nodes 1 and 2 in the	3 network. Find v1/v2 .		
15	List the advanta	ages of super mesh analysis.		
16	List the advanta	ages of super mesh analysis.		
17	Find the curren	t I and voltage across 30 Ω of the circuit shown in fig.		
FC		30-2 J		

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18	Use Nodal Voltage method and estimate the power dissipated in the 10 Ω resistance on the circuit shown in the fig.		
	4.2 1 5.2 5.2 3 + 2 2 2 2 3 40V - 7 8.2 2 10.2 8.2 15A		
е	Experiences	-	-
1		CO1	L2
2			
3			
4		CO3	L3
5			

Module - 2

Title:	Network Theorems	Appr	10 Hrs
		Time:	
а	Course Outcomes	-	Blooms
-	The student should be able to:	-	Level
1	Solve network problems by using principle of theorems	CO3	L4
2		CO4	L3
b	Course Schedule		-
Class No	Module Content Covered	CO	Level
17	Thevinis theorem , norton's theorem		
18	Numericals on thevinin's and norton's theorem		
19	Numericals continued		
20	Superposition theorem		
21	Numericals on superpostion theorem		
22	Numericals continued		
23	Maximum power transfer theorem		
24	Numericals on maximum power transfer		
25	Reciprocity theorem		
26	Numericals on reciprocity theorem		
27	Millman's theorem		
28	Numericals on millman's theorem		
29	Numericals on theorems		
	Numericals		
30	Test		
C	Application Areas	CO	Level

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1	Audio power a	mplifiers,Transmission line drive calculation	CO3	L3
2			CO4	L4
d	Review Ques	tions	-	-
19	Explain the conc	ep don R_=100n doon	CO3	L1
20	State and explain	KIOV -T E470-2 E380-2 +	CO4	L3
21	с	Ţ- SV	CO3	L2
22	Apply Norton	theorem to Dough a set		
	determine curr	rent Io for $\frac{5n^2}{2}$ $\frac{8n^{-j2n}}{2}$ $\frac{52n}{2}$		
	the given circui	tt heldsve ginn b		
	in iig.			
		52 352		
23	What is the condi	tion for maximum power	CO4	L4
	Find the curren	t through the branch 100 V 3 s.s.		
	a-b of the netwo	ork shown in fig		
	using Thevenin	is theorem.		

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Copyright ©20 24	Use the superpor	ved. rrent through 5 Ω resistor using superposition own in fig. q_{P} <td< th=""><th>CO4</th><th>L2</th></td<>	CO4	L2			
25	State and explain	Superposition theorem?	CO3	L5			
26	State and explain	n maximum power transfer theorem/	CO3	L2			
27	State and explai	in milliman's theorem.	CO3	L3			
28	Find Norton's eq	uivalent for the following circuit. 2n 4 2n 4 2n 4 2n 4 2n 4 2n 4 3v 1n					
29	Find the power theorem.	delivered by the 20 V Source using superposition					
30	state and explain	Norton's theorem?	C01	L2			
31	Verify the recipro	botty theorem for the network shown in fig . 100 v $14v$					
32	Determine the	Thevenin's equivalent across AB for the given circuit					
33	Find the value I	RL in the fig for maximum power to RL and calculate	CO3	L3			

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	he maximum p	bower. $ \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \end{array}\\ \end{array}\\ \end{array}\\ \end{array}\\ \end{array}\\ \end{array} \\ \begin{array}{c} \end{array}\\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array}\\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array}\\ \end{array} \\ \begin{array}{c} \end{array} \\ \begin{array}{c} \end{array}\\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array}$ } \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} } \\ } \\ \end{array} } \\ \end{array} } \\ \end{array} } \\ \end{array} } \\ } \\ \end{array} } \\ } \\ \end{array} } \\ \end{array} } \\ \end{array} } \\ \end{array} } \\ } \\ \end{array} } \\ \end{array} } \\ } \\ } \\ \end{array} } \\ } \\ T } \\ } \\ T T } \\ T T T T T T T T T T T T T T T T T T			
e					

E1. CIA EXAM - 1

a. Model Question Paper - 1

Crs Code	e:	CS501PC Sem: I Marks: 30 Time: 7			75	minut	es				
Coui	Course: Design and Analysis of Algorithms										
-	-	Note: Ans	wer any 3	questions	s, each ca	rry equa	al marks.	I	Mark s	CO	Level
1	а	Derive star	to delta an	d delta trar	nsformation	s.			20	CO1	L1
	b	Using sour	ce transforr	mation find	the 50v so	urce sho	own in fig belo	w.			L2
	С	Find the v analysis.	oltage acro	v + 10A 22	resistor s	hown in	i fig using m	esh		CO2	L3
	d										L1
2	a	Find Norton	's equivalent	for the follow	2.A. ELA ())A				20		L2

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	b	State and expla	ain with neat figures thevinin's theorem.			L4
						L3
						L2
3	а	Define the follo	owing	20	CO3	L1
		I) Linear and no	on linear devices			
		ii) Passice and	active elements			
		iii) Unilateral a	nd bi lateral networks			
	b	Find the equiva	alent resistance across A and B.		CO4	L2
			B			
			. 9 .			
	с					
	4					1.2
	u					LZ
		Ctata and prov		20		1.2
4	a b	State and prov	e thevinin's theorem.	20		
	D	Find the curre	the chrough 5 onm resistor showing in fig and hence			LZ
		verity reciproci				
			250 220-			
			5 <u>40°</u> A L			
			3^{j5n} T^{-j2n} v_x			
	r	Calculate the c	irrent I shown in figure using Milman's theorem			11
	C		2Ω 5Ω			
			-			
			10 - 21 - 21 - 21 - 21 - 21 - 21 - 21 -			
	d					L3

b. Assignment -1

Note: A distinct assignment to be assigned to each student.

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				Model Ass	signment	Question	S			
Crs C	ode:	CS501P	C Sem:	I M	arks:	5 / 10	Time:	90 - 120	minu	tes
Cours	se:	Design	and Analysis	of Algorithms	s					
Note:	Each	student	to answer 2-	3 assignmen	ts. Each a	assignmer	nt carries equ	ial mark.		
SNo	ι	JSN		Assignm	ent Desc	cription		Mark s	СО	Level
1	1KT	18EC001	Explain the c	oncept of so	ource tra	nsformati	ion?	5	CO1	L2
2	1KT	18EC003	State and ex	plain Kirchh	off's laws	;?		5	CO2	L3
3	1KT	18EC005	Using nodal	analysis fir	nd all br	anch cu	rrents for tl	ne	CO2	L4
			following cire	cuit						
4	1KT	18EC008	What is the co transfer to th	ondition for r e load?	maximum	power		5	CO1	L3
5	1KT	18EC009	Find Theveni circuit.	n's equivaler	nt for the	following]			
6	1KT	18EC010	State and ex	plain Superp	osition t	heorem?				
7	1KT	18EC011	Verify Super following cire	position theo cuit.	orem for	4 Ω resist	or for the			
8	1KT	18EC012	State and ex	xplain milli	man's tł	neorem.				
9	1KT	18EC013	Find Norton'	s equivalent	for the f	ollowing	circuit.			
10	1KT	18EC014	Find branch	currents fo	r the foll	owing ci	rcuit.			
11	1KT	18EC015	state and ex	plain Norton	's theore	m?				
12	1KT	18EC016	Verify the reo fig .	ciprocity the	orem for	the netw	ork shown i	n		
13	1KT	18EC017	Explain the c	oncept of so	ource tra	nsformati	ion?			
14	1KT	18EC018	State and ex	plain Kirchho	off's laws	;?				
15	1KT	18EC019	Using nodal following cire	analysis fir cuit	nd all br	anch cu	rrents for tl	ne		
16	1KT	18EC020	What is the co transfer to th	ondition for r e load?	maximum	power				
17	1KT	18EC021	Find Theveni	n's equivaler	nt for the	following	1			

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		circuit.		
18	1KT17EC001	State and explain Superposition theorem?		
19	DIP	Verify Superposition theorem for 4 Ω resistor for the		
		following circuit.		
20	1KT16EC030	State and explain milliman's theorem.		
21	DIP	Find Norton's equivalent for the following circuit.		
22	DIP	Find branch currents for the following circuit.		
23	DIP	state and explain Norton's theorem?		

D2. TEACHING PLAN – 2

Module – 3

Title:	Transient behaior and initial conditions	Appr	16 Hrs
		Time:	
а	Course Outcomes	-	Blooms
-	The student should be able to:	-	Level
1	Calculate current and voltages of a network to understand switching	CO3	L2
	analysis of networks by solving integro- diffrential equations		
2	Apply Laplace transform to solve network problems	CO4	L3
b	Course Schedule		
Class	Module Content Covered	СО	Level
No			
1	Introduction to transient behavior and initial condition.	CO3	L4
2	Behavior of circuit elements under switching condition and their	CO3	L4
	representation.		
3	Continuation of representations	CO3	L4
4	Evaluation of initial and final conditions in RL , RC and RLC circuits.	CO3	L4
5	Numericals	CO3	L4
6	Numericals	CO3	L4
7	Solution of network for step response	CO4	L4
8	Solution of network for ramp and impulse response	CO4	L4
9	Waveform synthesis	CO4	L4
10	Numericals and test		
11			
12			
13			
14			
15			

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16			
C	Multistage wide hand smallfiers Dewer flow algorithms	CO	Level
	Multistage wide band amplifiers, Power flow algorithms		L3
2		02	L4
d			
1	Refer the circuit shown in fig .Find Vc(0+).Assume that the switch was closed state for a long time	 CO1	LI
2	Refer the circuit shown . Find $iL(0+)$ and $Vc(0+)$. The circuit is in steady state with the switch in closed condition.	C01	L3
3	In the network shown in fig the switch is moved from position 1 to 2 at t=0.The steady state has been reached before switching. Calculate I,di/dt and d2i/dt2 at t = 0+	CO2	L2
4	In the given network , the switch K is opened at t=0.solve for the values of v,dv/dt and d2v/dt2 if I=2A ,R=200 Ω and L=1H	CO2	L4
5	In the circuit shown in fig a steady state is reached with switch k open. At $t=0$, the switch is closed. For element values given determine the values of v0(0-) and v0(0+)	CO2	L2
6	In the network of the fig th switch k is opened at t=0 after the network has attained steady state with the switch closed a) find the expression for vK at t=0+ b) If the parameters are adjusted	CO2	L5
7	Find the laplace transform of x(t) shown in fig	CO2	L2
8	Find the Laplace transform of x(t)=sin(2wot)u(t)	CO2	L3
9	Find the convolution of $h(t)=e-t$ and $f(t)=e-2t$	CO2	L4
10	Find the initial value of	C01	L1
11	Verify final value theorem	C01	L4
е	Experiences	_	-
1		CO1	L2
2			
3			
4		CO3	L3
5			

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Module - 4

Title:	Divide and Conquer	Appr	16 Hrs
		Time:	
a		-	Blooms
-	The student should be able to:	-	Level
1	Evaluate RLC elements in Resonant circuits.	C07	L2
2		CO8	L3
b	Course Schedule		
Class No	Module Content Covered	CO	Level
1	Introduction to concept of resonance		
2	Series resonance		
3	Related derivations		
4	Parallel resonance		
5	Related derivations		
6	q- factor,bandwidth		
7	Numericals		
8	Numericals		
9	Numericals		
10	test		
С		СО	Level
1	Tuning radio and audio receivers,	CO8	L3
2		C07	L4
d		-	-
1	Obtain the expression for resonant frequency, bandwidth and Q- factor for parallel R-L-C circuit.	C07	L1
2	Obtain the expression for resonant frequency, bandwidth and Q- factor for Series R-L-C circuit	C07	L3
3	Show that the resonant frequency circuit $f r^2 = f 1 f 2$ where $f 1$ and $f 2$ are the half power frequencies and $f r$ is the resonant frequency.	CO8	L2
4	Write the comparison between series resonance and parallel resonance?	C07	L4
5	In a parallel Resonant circuit shown in figure. (1), find the Resonant frequency. Dynamic	CO8	L2
	Impedance, Bandwidth, Q-factor and Current at resonance?		
6	A series RLC circuit has R=10 Ω , L=0.5H and C=40 μ F. The applied	CO8	L5

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	voltage is 100			
	Find (a) Resona	ant frequency & Quality factor of a coil (b) Bandwidth (c)		
	Upper and low	er		
	Half power fre	equencies (d) Current at resonance & current at half		
	power points (e) Voltage		
	across inducta	nce & voltage across capacitance at resonance.		
7	In a parallel	resonance circuit (Tank circuit) $R=2\Omega$, L=1mH and .		L2
	$C = 10\mu$ F, Find t	he		
	Resonant frequ	iency, Dynamic impedance and Bandwidth.		
8	Obtain the ex	pression for resonant frequency for parallel RL-RC		L3
	circuit.			
9	In a parallel R	esonant circuit shown in figure. (1), find the Resonant		L4
	frequency, Dyn	amic		
	Impedance, Ba	ndwidth, Q-factor and Current at resonance?		
10	In a two bran	ch RL-RC rallel resonant circuit L=0.4H and c=40Mf.		L1
	Obtain resonar	nt frequency for the following values of RI and Rc.		
11	A parallel RLC	circuit has a quality factor of 100at unity power factor		L4
	and operates a	at 1 khz and dissipates 1 warr when driven by 1A at		
	1khz . Find bai	ndwidth , R,L,C.		
е	Experiences		-	-
1		C07	L2	
2				
3				
4			CO8	L3
5				

E2. CIA EXAM – 2

a. Model Question Paper - 2

Crs		CS501PC	Sem:	I	Marks:	30	Time:	75	75 minutes			
Cod	e:											
Cou	rse:	Design and	Analysis	s of Algori	ithms	·						
-	- Note: Answer any 2 questions, each carry equal marks.						Mark	СО	Level			
									S			
1	a	In the give	en netwo	rk , the s	witch K is op	ened at	$t{=}0.solve \ for$	the	20	CO5	L1	
		values of v	,dv/dt ar	d d2v/dt2	2 if I=2A ,R=2	00 Ω and	L=1H					
	b	In the circ	uit show	n in fig a	a steady state	is reach	ned with switc	:h k			L2	
		open.At t=	0, the sw	itch is clo	sed. For elem	ent value	es given detern	nine				
		the values	of v0(0-)	and v0(0	+)							
										CO6	L3	
											L1	

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2	а	Obtain the ex	pression for resonant frequency, bandwidth and Q-	20	07	LZ
		circuit				
	h	A parallel RIC	circuit has a quality factor of 100at unity power factor			14
	U	and operates	at 1 khz and dissipates 1 warr when driven by 1A at			LT
	1khz . Find bandwidth , R,L,C.					
	с					L3
	d					L2
3	a	Refer the circo was closed sta	uit shown in fig .Find Vc(0+).Assume that the switch te for a long time	20	CO8	L1
	b	Refer the circo	uit shown . Find iL($0+$) and Vc($0+$). The circuit is in it the switch in closed condition.		CO8	L2
	с					L1
	d					L2
4	a	A series RLC o voltage is 100 Find (a) Reson (c) Upper and I Half power fro power points (across inducta	circuit has R=10Ω, L=0.5H and C=40µF. The applied V. ant frequency & Quality factor of a coil (b) Bandwidth ower equencies (d) Current at resonance & current at half e) Voltage nce & voltage across capacitance at resonance.	20		L2
	b	In a parallel	resonance circuit (Tank circuit) $R=2\Omega$, L=1mH and			L2
		C=10µF, Find	the			
		Resonant frequ	uency, Dynamic impedance and Bandwidth.			
	С					L1
	d					L3

b. Assignment - 2

Note: A distinct assignment to be assigned to each student.

	Model Assignment Questions									
Crs C	Code:	CS501P	C Sem:	I	Marks:	5 / 10	Time:	90 - 120 minutes		
Cours	Course: Design and Analysis of Algorithms									
Note:	Note: Each student to answer 2–3 assignments. Each assignment carries equal mark.									
SNo	No USN Assignment Description		Mark	СО	Level					
								S		
1 1KT18EC001 Refer the cir			Refer the cire	cuit shown	in fig .Finc	Vc(0+).A	ssume that th	e 5	C08	L2
	switch was closed state for a long time									



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2	1KT18EC003	Refer the circuit shown . Find iL(0+) and Vc(0+). The circuit is in steady state with the switch in closed condition.	5	CO9	L3
3	1KT18EC005	In the network shown in fig the switch is moved from position 1 to 2 at t=0.The steady state has been reached before switching. Calculate I,di/dt and d2i/dt2 at t = $0+$		CO10	L4
4	1KT18EC008	In the given network , the switch K is opened at t=0.solve for the values of v,dv/dt and d2v/dt2 if I=2A ,R=200 Ω and L=1H	5	CO9	L3
5	1KT18EC009	In the circuit shown in fig a steady state is reached with switch k open.At t=0, the switch is closed. For element values given determine the values of v0(0-) and v0(0+)			
6	1KT18EC010	In the network of the fig th switch k is opened at t=0 after the network has attained steady state with the switch closed a) find the expression for vK at t=0+ b) If the parameters are adjusted			
7	1KT18EC011	Find the laplace transform of x(t) shown in fig			
8	1KT18EC012	Find the Laplace transform of x(t)=sin(2wot)u(t)			
9	1KT18EC013	Find the convolution of $h(t)=e-t$ and $f(t)=e-2t$			
10	1KT18EC014	Find the initial value of			
11	1KT18EC015	Verify final value theorem			
12	1KT18EC016	Obtain the expression for resonant frequency, bandwidth and Q-factor for parallel R-L-C circuit.			
13	1KT18EC017	Obtain the expression for resonant frequency, bandwidth and Q-factor for Series R-L-C circuit			
14	1KT18EC018	Show that the resonant frequency circuit $f r^2 = f 1 f 2$ where $f 1$ and $f 2$ are the half power frequencies and $f r$ is the resonant frequency.			
15	1KT18EC019	Write the comparison between series resonance and parallel resonance?			
16	1KT18EC020	In a parallel Resonant circuit shown in figure. (1), find the Resonant frequency, Dynamic Impedance, Bandwidth, Q-factor and Current at resonance?			

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17	1KT18EC	CO21 A sei	ries RLC circuit has R=10 Ω , L=0.5H and C=40 μ F. The			
		appli	ed voltage is 100V.			
		Find	(a) Resonant frequency & Quality factor of a coil (b)			
		Band	width (c) Upper and lower			
		resor	nance.			
18	1KT17EC	C001 In a	parallel resonance circuit (Tank circuit) $R=2\Omega$, $L=1mH$			
19	DIP	in the expression for resonant frequency for parallel				
		RL-R	C circuit.			
20	1KT16EC	C030 In a	parallel Resonant circuit shown in figure. (1), find the			
		Reso	nant frequency, Dynamic			
		Impe	dance, Bandwidth, Q-factor and Current at			
		resor	nance?			
21	DIP	In a	two branch RL-RC rallel resonant circuit L=0.4H and			
		c=40	Mf. Obtain resonant frequency for the following			
		value	es of RI and Rc.			
22	DIP	A pa	rallel RLC circuit has a quality factor of 100at unity			
		powe	er factor and operates at 1 khz and dissipates 1 watt			
		wher	n driven by 1A at 1khz . Find bandwidth , R,L,C.			
23	DIP	A pa	rallel RLC circuit has a quality factor of 100at unity			
		powe	er factor and operates at 1 khz and dissipates 1 watt			
		wher	n driven by 1A at 1khz . Find bandwidth , R,L,C.			

D3. TEACHING PLAN - 3

Module - 5

Title:	Divide and Conquer	Appr	16 Hrs
		Time:	
а	Course Outcomes	-	Blooms
-	The student should be able to:	-	Level
1	Evaluate time and space complexity and calculate performance	CO9	L2
2	Understand searching and sorting schemes	CO10	L3
b	Course Schedule		
Class	Module Content Covered	СО	Level
No			
1	Two port network parameters:		
2	Definition of Z parameters,		
3	Definition of Y parameters		

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4		parameters									
5	Transmission	parameters,									
6	Modelling wit	h these parameters, r									
7	Relationship b	etween Z and Y parameters									
8	Relationship between Z and h parameters										
9	Relationship b										
10	Relationship b	etween h and Transmission parameters									
С	Application A	reas	CO	Level							
1	Use to find per	formance of algorithm	CO10	L3							
2	Used in Search	ing and sorting	CO9	L4							
d	Review Ques	tions	-	-							
1	Define ABCD	Parameters. Express relation between y and ABCD	CO10	L1							
	p[arameters										
2	Obtain hybrid p	parameters in terms of Z parameters	CO10	L3							
3	Find the Z	– parameter Z ₁₁ in the circuit shown below.	CO9	L2							
	1	2									
	<u> </u>	~ • ~ ~ • ~ • ~ •									
	V1	V2									
		2 Z									
		52 54									
	a'	°									
4	Find the Y para	meters of the Circuit shown above	CO9	L4							
5	Find the Transı	nission Parameters of the Circuit shown above		L2							
6	Find the Hybric	I parameters of the circuit shown above		L5							
7	Obtain h paran	neters in terms of Z Parameters		L2							
8	Obtain h paran	neters in terms of Y Parameters		L3							
9	Obtain h paran	neters in terms of transmission Parameters		L4							
10	What is the qua	ality factor for the following circuit?		L1							

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11	$ \begin{array}{c} + \\ + \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ -$	$R_{1} = 1 \text{ k}\Omega$ $L_{1} = 5 \text{ H}$ $C_{1} = 1 \mu\text{F}$ individth of the following circuit? $R_{1} = 1 \text{ k}\Omega$ $L_{1} = 5 \text{ H}$ $C_{1} = 1 \mu\text{F}$		L4	
e	Experiences		_	_	
1			CO10	L2	
2					
3					
4			CO9	L3	
5					

E3. CIA EXAM - 3

a. Model Question Paper - 3

Crs		CS501PC	Sem:	I	Marks:	30		Time	2:	75 r	75 minutes			
Cod	e:													
Cou	Course: Design and Analysis of Algorithms													
-	-	Note: Answer any 2 questions, each carry equal marks.								ſ	Mark	СО	Level	
											S			
1	a	List the di	fferences b	etween line	ear and	nonline	ear circ	uits,A	ctive a	nd	20	CO9	L1	
		passive elements.												
	b	Derive th	e expressi	on for s	tar to	delta	and	delta	to s	tar			L2	
		transforma	tions.											

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	C	transformation	network into single wotlage source using source		09	L3	
		liansionnation					
		r j					
		•) (-) ACP					
		L.					
	d	Draw the equiv	valent resistance at terminlas a and b in the networks.			L1	
			10.55 Non Equin				
2	а	Apply Norton t	heorem to determine current 10 for the given circuit	20	CO10	L2	
		m ng.					
			the second				
			5-22 8-2-12. 310 \$202				
			LOIS AND				
			b B				
	b	What is the condi	tion for maximum power transfer to the load?			14	
	ی د	Find the curren	t through the branch a-b of the network shown in			 L3	
		fig					
		using Thevenin	's theorem.				
			\$30-				
			IOLOV 3 \$5-				
			a pi a				
			b				
	d	Estimate the cui	rrent through 5 Ω resistor using superposition			L2	
		in the circuit she	own in fig.				
			γ_{I_1}				
			32v 2.2				
			9A (A) \$5. (A) I2 \$10. (A) 4A				
		Use the superpo					
		resistor in the ci	ircuit shown in fig.				
			г т-₩й-э				
			$ = -j2\Omega $				

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3	a	20	CO10	L1
	b		CO10	L2
	с			L1
	d			L2
4	a	20		L2
	b			L2
	с			L1
	d			L3

b. Assignment - 3

Note: A distinct assignment to be assigned to each student.

	Model Assignment Questions											
Crs C	ode:	CS501P	C Sem:	I M	larks:	5 / 1	0	Time:	9	0 – 120 minutes		
Cours	se:	Design	and Analysis	of Algorithm	S							
Note:	Note: Each student to answer 2–3 assignments. Each assignment carries equal mark.											
SNo	U	ISN		Assignm	ent Des	scripti	on			Mark s	со	Level
1	IKT18EC001 Define ABC ABCD p[ara			Parameters. neters	. Expres	s relat	ion l	between y	and	5	CO9	L2
2	1KT1	8EC003	Obtain hybri	d parameters	in term	s of Z I	para	meters		5	CO9	L3
3	3 IKT18EC005 Find the Z – parameter Z ₁₁ in the circuit shown below a 1 v1 v2 v1 v2 a a b v2 a b v2 a b v2 b b v2 b b v2 c c c c c c c c c c c c c c c c c c c							elow.		CO10	L4	
4	1KT1	8EC008	Find the Y pa	rameters of	the Circu	uit sho	own a	above		5	CO10	L3
5	1KT1	8EC009	Find the Tra above	ansmission F	Paramete	ers of	the	Circuit sh	own			
6	1KT1	8EC010	Find the Hyb	rid paramete	rs of the	e circuit	t shc	wn above				
7	1KT1	8EC011	Obtain h par	ameters in te	rms of Z	Z Paran	neter	ſS				
8	1KT1	8EC012	Obtain h par	ameters in te	rms of Y	Y Paran	neter	ſS				
9	1KT1	8EC013	Obtain h par	ameters in te	rms of t	ransmi	issio	n Paramet	ers			
10	1KT1	8EC014	What is the c	quality factor	for the fo	ollowing	g circ	uit?				



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21	Γ	DIP V	Vhat is	the quality factor for the following circuit? $R_1 = 1 \ k\Omega$ $L_1 = 5 \ H$ $C_1 = 1 \ \mu F$			
22	Γ	DIP M	Vhat is	the bandwidth of the following circuit? $R_1 \ge 1 k\Omega$ $L_1 \ge 5 H$ $C_1 = 1 \mu F$			
23	Ι	DIP C	btain l	h parameters in terms of Z Parameters			

F. EXAM PREPARATION

1. University Model Question Paper

Cοι	irse:	Design and Ar	nalysis of Alg	orithms			Month	/ Year	May /	2018
Crs	Code:	CS501PC	Sem:	I	Marks:	100	Time:		180	
									minut	es
-	Note	Answer all FIV	E full questic	ons. All ques	tions carry e	qual marks		Mark	СО	Leve
				S		I				
1	a	List the differ	ive and	16 /	CO1					
		passive eleme		20						
	b	Derive the	to star							
		transformatio	ns.							
	с	Convert the	network in	to single v	votlage sou	rce using	source		CO2	
		transformatio	ns							

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	d				
		OR			
-	a	Draw the equivalent resistance at terminlas a and b in the networks.	16 / 20	CO1	
	b	Find voltage v across 3ohms using nodal analysis		CO2	
	C	Using source transformation find the power deliverd to the load by 50v source.			
2	а	Explain the concept of source transformation?	16 /	C03	
	h	State and explain Kirchhoff's laws?	20		
	C	$10V + \frac{1}{10} = \frac{100}{100} = \frac{100}{100}$		CO4	
		OR			
-	a	Apply Norton theorem to determine current Io for the given circuit in fig.	16 / 20	CO3	
	b	What is the condition for maximum power transfer to the load?		CO4	
	С	Find the current through the branch a-b of the network shown in			

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Copyrig	<u>ht ©2017</u>	. cAAS. All rights reser fig using Theveni	n's theorem.				
3	a	Refer the cire was closed st	cuit shown in fig .Find Vc(0+).Assume that the switch ate for a long time	16 / 20	CO5		
	b	Refer the cir	cuit shown . Find $iL(0+)$ and $Vc(0+)$. The circuit is in with the switch in closed condition				
	ſ	In the networ	k shown in fig the switch is moved from position 1 to 2		C06		
	C	at t=0.The st I,di/dt and d2	eady state has been reached before switching. Calculate $2i/dt^2$ at t = 0+				
			OR				
	а	In the given values of v,dv	network , the switch K is opened at t=0.solve for the ν/dt and d2v/dt2 if I=2A ,R=200 Ω and L=1H				
-	b	In the circuit open.At t=0, the values of	shown in fig a steady state is reached with switch k the switch is closed. For element values given determine $v0(0-)$ and $v0(0+)$	16 / 20	CO5		
	С	In the netwo network has a a) find the ex b) If the parai	ork of the fig th switch k is opened at t=0 after the attained steady state with the switch closed pression for vK at t=0+ meters are adjusted				
	с	Explain the t	terms P, NP, NP-Hard and NP-Complete with suitable		CO6		
		example. Also	o give relationship between them.				
4	а	Define ABCD p[arameters	Parameters. Express relation between y and ABCD	16 / 20	C07		
	b	Obtain hybrid	parameters in terms of Z parameters				
	C	Find the Z	Z – parameter Z ₁₁ in the circuit shown below.		C08		



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		OR			
	a	Find the Y parameters of the Circuit shown above			
	b	Find the Transmission Parameters of the Circuit shown above			
-	с	Find the Hybrid parameters of the circuit shown above	16 / 20	C07	
5	a	Obtain the expression for resonant frequency, bandwidth and Q- factor for parallel R-L-C circuit.	16 / 20	CO9	
	b	Obtain the expression for resonant frequency, bandwidth and Q- factor for Series R-L-C circuit		CO10	
	с	Show that the resonant frequency circuit $f r^2 = f^1 f^2$ where f^1 and f^2 are the half power frequencies and $f r$ is the resonant frequency.			
		OR			
	а	Write the comparison between series resonance and parallel resonance?			
	b	In a parallel Resonant circuit shown in figure. (1), find the Resonant frequency, Dynamic Impedance, Bandwidth, Q-factor and Current at resonance?			
	С	A series RLC circuit has $R=10\Omega$, $L=0.5H$ and $C=40\mu$ F. The applied voltage is 100V. Find (a) Resonant frequency & Quality factor of a coil (b) Bandwidth (c) Upper and lower Half power frequencies (d) Current at resonance & current at half power points (e) Voltage	16 / 20	CO9	

2. SEE Important Questions

Cou	rse:	Design and Ar	Design and Analysis of Algorithms Month					/ Year	May /	2018
Crs	Code:	CS501PC	Sem:	3	Marks:	100	Time:		180	
									minut	es
	Note	Answer all FIV	E full questio	ons. All ques	tions carry	equal marks.	•	_	_	
Мо	Qno.	Important Que	estion					Mark	СО	Year
dul								S		
e										
1	1	Find the cu	rrent throu	gh each b	ranch by	network re	duction	16 /		2004
		technique.						20		
			3.0.	5.0.	4					
		+	-							
		100 V _	_	\$ 20.	₹100					
EC						2.0.)

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	2	Calculate a) the equivalent resistances across the terminals of the supply, b) total current supplied by the source and c) power delivered to 16 ohm resistor in the circuit shown in figure $\frac{1000 \times \frac{1}{100} \times \frac{100}{100} \times $		2004
	3	In the circuit shown, determine the current through the 2 ohm resistor and the total current delivered by the battery. Use Kirchhoff's laws.		2004
	4	Determine the mesh currents I1 and I2 for the given circuit shown below $ \begin{array}{c} $		2007
	5	Determine the value of V2 such that the current through the impedance $(2+j3)$ ohm is zero.		2007
2	1	Estimate the current through 5 Ω resistor using superposition theorem, in the circuit shown in fig. Use the superposition theorem to find the current through 4 Ω resistor in the circuit shown in fig. $5 \angle 0^{\circ} A$ $\int_{10}^{10} \Omega$ $\int_{10}^{10} \Omega$ $\int_{20}^{20} \angle 90^{\circ} V$	16 / 20	2005
EC				1
Prep	ared	by Checkey w		Approved

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	2	State and explain	n Superposition theorem?		2005
	3	State and explai	n maximum power transfer theorem/		2009
	4	State and expla	ain milliman's theorem.		2006
	5	Find Norton's ed	quivalent for the following circuit.		2004
			$\frac{2\Omega}{W}$ $\frac{2\Omega}{\sqrt{2}}$ $\frac{1}{\sqrt{3}}$ $\frac{1}{\sqrt{3}}$		
3	1	In the circuit	shown in fig a steady state is reached with switch k	16 /	2006
		open.At t=0, t the values of v	the switch is closed. For element values given determine $v0(0-)$ and $v0(0+)$	20	
	2	In the netwo	rk of the fig th switch k is opened at t=0 after the		2006
		network has a	ttained steady state with the switch closed		
		a) find the exp	pression for vK at t=0+		
		b) If the paran	neters are adjusted		
	3	Find the lapla	ce transform of x(t) shown in fig		2007
	4	Find the Lapla	ce transform of x(t)=sin(2wot)u(t)		2004
	5	Find the convo	olution of h(t)=e-t and f(t)=e-2t		2004
4	1	Obtain the ex factor for para circuit.	xpression for resonant frequency, bandwidth and Q- allel R-L-C	16 / 20	2004
	2	A parallel RLC	circuit has a quality factor of 100at unity power factor		2004
		and operates 1khz . Find ba	at 1 khz and dissipates 1 warr when driven by 1A at andwidth , R,L,C.		
	3	Show that the 2 are the half and f r is the r	resonant frequency circuit f r2 =f 1 f 2 where f 1 and f power frequencies resonant frequency.		2006
	4	Write the co resonance?	omparison between series resonance and parallel		2004
	5	In a parallel R frequency, Dy Impedance, Ba	Resonant circuit shown in figure. (1), find the Resonant namic andwidth, Q-factor and Current at resonance?		2007
		A series RLC voltage is 100 Find (a) Resor	circuit has R=10 Ω , L=0.5H and C=40 μ F. The applied V. Nant frequency & Quality factor of a coil (b) Bandwidth		

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		(c) Upper and	lower			
		Half power fi	requencies (d) Current at resonance & current at half			
		power points (e) Voltage				
		across induct	ance & voltage across capacitance at resonance.			
5	1	Obtain h para	meters in terms of Z Parameters			
	2	Obtain h para	meters in terms of Y Parameters			
	3	Obtain h para	meters in terms of transmission Parameters			
	4	What is the qu	uality factor for the following circuit?			
			}			
		+	R ₁ 21 kΩ			
		$\bigcirc \mathbf{v}_1$	{			
		-Y -				
			LÉSH			
		↓	18.11			
			$C_1 = 1 \mu F$			
	5	What is the ba	ndwidth of the following circuit?			
		4	R ₁ 1 ko			
		The second secon				
		₩ ¹				
			, e			
			51g5H			
			C ₁ + 1 μF			
		≟				
				Í		

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G. Content to Course Outcomes

1. TLPA Parameters

Table 1: TLPA – Example Course

Мо	Course Content or Syllabus	Content	Blooms'	Final	Identifi	Instructi	Assessmen
du	(Split module content into 2 parts which	Teachin	Learnin	Bloom	ed	on	t Methods
e-	have similar concepts)	g Hours	g Levels	s'	Action	Methods	to Measure
#			for	Level	Verbs	for	Learning
			Content		for	Learning	
					Learnin		
					g		
A	В	С	D	E	F	G	Н
1	Practical sources,source	13	L4	L4	-	Lecture	Slip test
	transformation,network reduction using				Underst		
	star-delta transformations,loop and node				and		
	analysis with linearly dependent and				-		
	independent sources for DC and AC				Explore		
	networks,concepts of super node and						
	super mesh						
2	Superposition,Reciprocity, Millman's	15	L4	L4	-	Explanat	Q & A
	theorems, Thevini's and Norton's Theorems				Identify	ion	
	,Maximum power transfer theorem				_		
3	Behavior of circuit elements under	10	L4	L4	_	Descript	Q & A
	switching condition and their				Interpre	ion	
	representation, evaluation of initial and				t		
	final conditions in RL,RC and RLC circuits				_		
	for AC and DC excitations						
	Solutions of networks ,step,ramp and						
	impulse response, waveform synthesis						
4	Series and parallel resonance, frequency	10	L3	L3	-	Explanat	Q & A
	response of series and parallel circuits , q-				Compar	ion	
	factor ,bandwidth				e		
					–		
5	Definition of Z,Y,h and Transmission	12	14	14	_	Examine	Focused on
	parameters, modeling with these				Illustrat		analyzing /
	parameters, relationship between				e		compare
	parameters sets				_		

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Table 2: Concept to Outcome – Example Course

Мо	Learning or	Identifie	Final	Concept	CO Components	Course Outcome
dul	Outcome from	d	Concept	Justification	(1.Action Verb,	
e-	study of the	Concept		(What all Learnin	g 2.Knowledge,	
#	Content or	s from		Happened from	3.Condition /	Student Should
	Syllabus	Content		the study of	Methodology,	be able to
				Content / Syllabu	s. 4.Benchmark)	
				A short word for		
				learning or		
				outcome)		
A	Ι	J	K	L	М	N
1	Reduce the	Transfo	Network	Analog to digit	al 1)Understand	Reduce the circuit
	circuit	rmation	Reduction	conversion ł	y2)analog signal	complexity and
	complexity	loop		sampling.	reconstruction	apply Kirchhoff's
	and apply	and			3)from the samples	laws to solve the
	Kirchhoff's	node			4)at Nyquist rate	network.
	laws to solve	analysis				
	the network.					
2	Solve network	Networ	Network	Analog to digit	al 1)Understand	Solve network
	problems by	k	Reduction	conversion l	y2)DFT behavior	problems by using
	using principle	Theore	using	sampling.	3)with input	principle of
	of theorems	ms	theorems		4) of Variable	theorems
					condition	
3	Calculate	Circuit	Circuit	Behavior of DF	T1)Understand	Calculate current
	current and	switchin	conditions	with inputs.	2)DFT behavior	and voltages of a
	voltages of a	g	before ad		3)with input	network to
	network to		after		4) of Variable	understand
	understand		swithing		condition	switching analysis
	switching					of networks by
	analysis of					solving integro-
	networks by					diffrential
	solving					equations
	integro–					
	diffrential					
	equations					
4	Apply Laplace	S-	Solution to	Behavior of DF	T1) Compare	Apply Laplace
	transform to	domain	complex	with inputs.	2) DFT with	transform to solve
	solve network	analysis	problems		3) FFT	network problems
	problems		using LT		4)wrt efficient	
					Computation	
5	Evaluate RLC	Resona	Resonance	Computationally	1)Develop	Evaluate RLC
	elements in	nce		efficient radix	22) DFT	elements in

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	Resonar	nt			algorithm	toco	mputation	Resonant circuits.
	circuits.				compute DFT.	3)ເ	using	
						DI	Talgorithm	
						4)f	for a given input	
						ler	ngth	
5	Apply tv	vo port	Netwo	r Network	Computationally	1)[Develop	Apply two port
	network	,	k	model	efficient radix	22)	DFT	network
	paramet	ters to	Modeli	n	algorithm	toco	mputation	parameters to solve
	solve	given	g		compute DFT.	3)ເ	using DIF	given network.
	network					alg	gorithm	
						4)f	for a given input	
						ler	ngth	