



SARDAR PATEL UNIVERSITY
Vallabh Vidyanagar, Gujarat
(Reaccredited with 'A' Grade by NAAC (CGPA 3.25)
Syllabus with effect from the Academic Year 2021-2022

Master of Science (Electronics)
M.Sc. (Electronics) Semester I

Course Code	PS01EELE52	Title of the Course	Network Analysis
Total Credits of the Course	4	Hours per Week	3+1=4 Hours

Course Objective	<ol style="list-style-type: none">1. To impart Knowledge about Techniques of solving circuits involving different active and passive elements.2. To analyze the behavior of the circuit's response in time domain.3. To identify the behavior of the circuit's response in frequency domain.4. To understand the significance of network functions.
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Course Content		
UNIT	Description	Weightage* %
1	Network Model, Network variables and elements- active and passive, Ladder network, Source transformations, Star-delta transformation, Node voltage and mesh current methods, Formulation of network equations. RLC network, Series RLC networks, Zero input and zero state response, Response of RLC network for exponential inputs.	25
2	System function, Types of system functions, Impedance and admittance of RLC elements, Laplace transformation and useful theorems, Heaviside's partial fraction expansion technique, Transfer function- poles and zeroes, Application of Laplace transform to networks	25
3	Network theorems- Super position, Thevenin, Norton, Millman, Reciprocity and Maximum power transfer theorems, Two port networks and parameters, Networks topology, Concept of a network graph, Chords or links.	25
4	Formulation of network equations, Network filters, Symmetrical networks, Filter characteristics, Attenuators- Symmetrical, Equalizers- attenuation and phase, Fourier series, and convergence, Fourier transforms, Application to networks.	25





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Teaching-Learning Methodology	Traditional Classroom teaching with use of Multimedia facility in the classroom. Use of Computer Tool for live demonstration and problem / design based approach.
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Evaluation Pattern		
Sr. No	Details of Evaluation	Weightage
1	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%
2	Internal Continuous Assessment in the form of Practical, Viva Voce, Quizzes, Seminars, Assignments, Attendance (as per CBCS R6.8.3)	15%
3	University Examination	70%

Course Outcome. Having completed this course, the learner will be able to	
1	Learn the behavior of different circuits and their response using various circuit analysis tools and theorems
2	Understand the analysis in time domain and frequency domain.
3	Know the basic concepts regarding the system definition mathematically and associated network function.
4	Understand the concept of Network synthesis

Suggested References:	
Sr. No.	References
1	Network Theory N.C.Jagan and C.Lakshminarayana, (BS Publications, Hyderabad, INDIA)
2	Network Analysis (Including passive network synthesis), C.L.Wadhwa, (New Age International (P) Ltd, Publishers, New Delhi, INDIA)
3	Network and systems D.Roy Chowdhary, (New Age International Publishers, New Delhi, INDIA)
4	Network Analysis M.E Van Valkenburg, (Prentice Hall of India Pvt. Ltd., New Delhi, INDIA)

On-line resources to be used if available as reference material
On line resources.
1. https://lecturenotes.in/subject/537/network-analysis
2. https://www.smartzworld.com/notes/network-theory-pdf-notes-nt-pdf-notes/ .
3. http://nptel.vtu.ac.in/econtent/Web/ECE/15EC34/PDF/Module1.pdf

