VEER SURNDRA SAI UNIVERSITY OF TECHNOLOGY, BURLA, ODISHA

LESSON PLAN

Semester: 3rd B.Tech. (Electrical Engineering), Session: 2020-21

Subject: Network Theory, (Subject Code: 1303)

Branch: Electrical & Electronics Engineering, Name of Faculty: Dr. Gyan Ranjan Biswal

Period	Module No.	Topics to be Covered	Signature of Faculty
1	I	MODULE-I -> *Coupled Circuits:* Defining Self Inductance and Mutual Inductance; Interrelation between Self and Mutual Inductances in a coupled circuit; Coefficient of coupling and Dot conversion	
2	I	Equivalent inductance in series connected mutually coupled network using dot conversion; Equivalent inductance in a parallel/ shunt connected mutually coupled network using dot conversion, Some practice problems; Ideal Transformers: definitation and assumptions; Linear transformer; Coupled curcuits as a Transformer	
3	I	Introducing *Transient and Strady State Analysis* ; Time domain analysis of First order networks: RL and RC types	
4	I	Second order network: RLC circuits; RL, RC and RLC networks using Laplace Transform	
5	I	Both Time domain and Frequency domain analysis with DC and AC (sinusoidal) excitations; Respnse to Forced Inputs: Step, Impulse and Ramp types	
6	I	Doubt session and Test - I	
7	II	MODULE-II -> *Two-Port Networks:* two port parameters; Open circuit Impedance (Z) parameter	
8	II	Short circuit Admittance (Y) parameter	
9	II	Image and Hybrid parameters	
10	II	Transmission (ABCD) parameter	
11	II	Ideal Two port devices e.g. Ideal Transformers, Tee and Pie circuit representation; Cascade and Parallel Connections	
12	II	Doubt session and Test - II	
13	II	MODULE-III ->*Network Function & Responses*: concept of complex frequency, Driving point and transfer functions for one port and two port networks	
14	II	Poles and Zeros of network functions; Restrictions on Pole and Zero locations of network functions;	
15	II	Impulse response and Complete response	
16	II	*Three phase circuits*: analysis of unbalanced loads; Neutral shift and Symmetrical components; Analysis of unbalanced system	
17	II	Power in terms of unbalanced and balanced loads; Power in terms of symmetrical components	
18	II	Doubt session and Test - III	
19	III	MODULE-IV -> Network Synthesis: Introduction, realizability concept	

20	III	Hurwitz property and Positive realness, properties of positive real functions	
21	III	Synthesis of RL, RC, and LC driving point functions	
22	III	Foster Forms	
23	III	Cauer Forms	
24	III	Doubt session and Test - IV	
25	IV	MODULE-V -> *Graph Theory*: Introduction, Linear graph of a network, Tie-set and Cut-set schedule	
26	IV	Incidence matrix, analysis of resistive network using Tie-set	
27	IV	Analysis of resistive network using Cut-set, dual of a network	
28	IV	Filters: classification of filters	
29		Characteristics of Ideal filters	
30	IV	Doubt session and Test - V	

Signature of the Faculty

Signature of HOD (EEE)