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DEPARTMENT OF ELECTRICAL ENGINEERING

Govt. Polytechnic, Balasore

LESSON PLAN FOR ACADEMIC SESSION - 2026-27

ELECTRIC CIRCUITS & NETWORKS

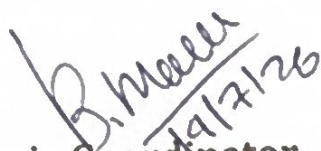
Course Code : Th-1	Semester : 3RD
Total Periods : 45 Hrs	Examination : 3 Hours
Theory Periods : 3P/Week	Progressive Assessment : 30 Marks
End Semester Examination : 70 Marks	
Maximum Marks : 100	
Semester From Date : 01/07/2026	To Date :05/11/2026
Name of Teaching Faculty: Er. Prasanta Ray	

WEEK	PERIOD	TOPIC
1st	1 st	Network Theorems in DC Circuits Node & Mesh Analysis of Electrical Circuits with simple problem.
	2 nd	Thevenin's Theorem, Norton's Theorem Statement, Explanation & applications
	3 rd	Maximum Power transfer Theorem, Superposition Theorem Statement, Explanation & applications
2 nd	1 st	Millman Theorem, Reciprocity Theorem-Statement, Explanation & applications
	2 nd	Simple numerical problems on above.
	3 rd	A. C. Fundamentals & Sinusoidal Steady State Analysis
3 rd	1 st	Definitions & explanation of Active & Passive elements.
	2 nd	Concept of complex impedance, Rectangular & polar form. Simple problems.
	3 rd	Idea on Apparent, real, and active power.
4 th	1 st	Sinusoidal response of a series R-L, R-C circuit
	2 nd	Sinusoidal response of a series R-L-C circuit
	3 rd	Sinusoidal response of a parallel R-L, R-C circuit
5 th	1 st	Sinusoidal response of a parallel R-L-C circuit
	2 nd	Resonance Introduction to resonance circuits & Resonance tuned circuit, Series & Parallel resonance.
	3 rd	Expression for series resonance, Condition for Resonance,

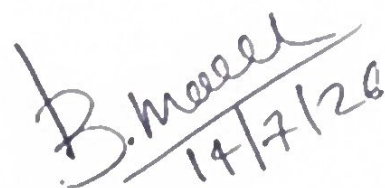
		Frequency of Resonance, Impedance, Current, Voltage, power, Q Factor
6 th	1 st	Power Factor of Resonance, Bandwidth in term of Q. Voltage Magnification, Acceptor Circuit.
	2 nd	Parallel Resonance Condition for Resonance, Frequency of Resonance, Impedance, Current, Voltage, power, Q Factor
	3 rd	Power Factor of Resonance, Bandwidth of resonant circuit / Tank circuit Current magnification, Rejector Circuit,
7 th	1 st	Comparisons of Series resonance & applications
	2 nd	Comparisons of Parallel resonance & applications
	3 rd	Simple problems on above Circuits
8 th	1 st	Passive Filter Idea of Passive & Active Filter, Their relative advantages and disadvantages
	2 nd	Idea of Fourier Series & frequency spectrum. (concept only
	3 rd	Construction, Principle of operation, Characteristics of Low pass & High pass filter.
9 th	1 st	Construction, Principle of operation, Characteristics of Band pass & Band stop filter.
	2 nd	Design of Low pass filter.
	3 rd	Design of High pass filter.
10 th	1 st	Numerical problems on the above
	2 nd	Composite filter (concept only).
	3 rd	Laplace transform and its applications Definition & properties of Laplace Transform (LT)
11 th	1 st	LT of unit step, impulse, ramp, exponential, sine, cosine, pulse, impulse, Dirac delta function.
	2 nd	Explanation of Laplace Transform theorems like Differential, integral, Time displacement, initial value & final value
	3 rd	Inverse Laplace Transformation.
12 th	1 st	Simple problem
13 th	2 nd	Simple problem
	3 rd	Application of Laplace transformation in circuit theory
	1 st	Idea on Linear & Non linear networks
14 th	2 nd	Unilateral & Bilateral networks
	3 rd	Explanation of Z parameter (Open Circuit Impedance Parameter)
	1 st	Explanation of Y parameter (Short Circuit Admittance Parameter)
15 th	2 nd	Simple problem on above parameters
	3 rd	Explanation of h -parameter (Hybrid Parameter)
	1 st	Interrelation of above parameters
15 th	2 nd	Inter Connection of Two Port Network
	3 rd	Simple problem on above parameters



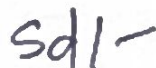
Guest faculty
G.P, BLS
Teaching Faculty



Academic Coordinator
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