

Lesson Plan

**Name of the Subject : FOUNDATIONS OF ELECTRICAL ENGINEERING (14BT30236)**

**Class & Semester : IIB. Tech – I Semester**

**Name(s) of the faculty Member(s): Mr. I.Kumaraswamy**

S. No.	Topic	No. of periods	Book(s) followed	Topics for self study
<b>UNIT – I: BASICS OF ELECTRICAL ENGINEERING</b>				
1.	Sources of Electricity, basic definitions of commonly used terms Basic circuit components	1	T1	Network theorms
2.	Resistive networks	1	T1	
3.	Inductive networks, capacitive networks	1	T1	
4.	TUTORIAL 1	1	T1	
5.	Kirchoff's laws, series parallel circuits	1		
6.	Nodal analysis	1	T1	
7.	Mesh analysis –Problems	1	T1	
8.	TUTORIAL 2	1		
9.	Star-delta and delta -star transformations, Formative Test	1	T1	
<b>Total periods required:</b>		<b>09</b>		
<b>UNIT – II: AC CIRCUITS</b>				
10.	Principle of AC voltage, Wave form and Basic definitions	1	T1	Waveform analysis
11.	RMS and Average values of alternating currents and voltage, Form factor and Peak factor	1	T1	
12.	TUTORIAL 3	1		
13.	Phasor representation of alternating quantities	1	T1	
14.	J Operator and phasor algebra	1	T1	
15.	Analysis of AC circuits (1)	1	T1	
16.	TUTORIAL 4	1		
17.	Analysis of AC circuits (2), Single phase Series and parallel circuit	1	T1	
18.	Fundamentals of 3-phase supply, Formative Test	1		
<b>Total periods required:</b>		<b>09</b>		
<b>UNIT – III: DC MACHINES</b>				
19.	Constructional details of a DC machine	1	T1 & R1	Need of starters for starting DC motors
20.	TUTORIAL 5	1		
21.	Principle of operation of a DC generator	1	T1 & R1	
22.	Types of DC generators	1	T1 & R1	
23.	EMF equation of a generator – Applications.	1	T1 & R1	
24.	TUTORIAL 6	1		
25.	Principle and operation of DC motor	1	T1 & R1	

S. No.	Topic	No. of periods	Book(s) followed	Topics for self study	
26.	Types of DC motors (1)	1	T1 & R1		
27.	Types of DC motors (2)	1	T1 & R1		
28.	TUTORIAL 7	1			
29.	Torque equation, losses and efficiency- Applications, Formative Test	1	T1 & R1		
<b>Total periods required:</b>		<b>11</b>			
<b>UNIT – IV: AC MACHINES</b>					
30.	Transformers- principle of operation, constructional details (1)	1	T1 & R1	OC & SC test on transformer.	
31.	Transformers- principle of operation, constructional details (2)	1	T1 & R1		
32.	Tutorial 8	1			
33.	Losses and efficiency	1	T1 & R1		
34.	regulation of transformer	1	T1 & R1		
35.	Principle of operation of three phase induction motors	1	T1 & R1		
36.	TUTORIAL 9	1			
37.	slip ring and squirrel cage motors	1	T1 & R1		
38.	Principle of operation of Alternator (salient and non-salient type)	1	T1 & R1		
39.	AC servo motor	1	T1 & R1		
40.	Tutorial 10	1			
41.	Synchros	1	T1 & R1		
42.	stepper motor, Formative Test	1			
<b>Total periods required:</b>		<b>13</b>			
<b>UNIT – V: CONTROL SYSTEMS</b>					
43.	Introduction, classification of Control Systems- Open loop and closed loop systems	1	T2	Time analysis response	
44.	Tutorial 11	1			
45.	Temperature and traffic control systems	1	T2		
46.	Linear and non-linear systems, time variant and time invariant systems	1	T2		
47.	Feedback and effect of feedback systems	1	T2		
48.	TUTORIAL 12	1			
49.	Transfer Functions	1	T2		
50.	formation of transfer functions for Mechanical and Electrical systems	1			
51.	Block diagram reduction technique	1	T2		
52.	Tutorial 13	1			
53.	Signal flow graphs- Mason's gain formula (elementary treatment only), Formative Test.	1	T2		
<b>Total periods required:</b>		<b>11</b>			
<b>Grand total periods required:</b>		<b>53</b>			

**TEXT BOOKS:**

- T1. V.K.Mehta, Rohit Mehta, *Principles of Electrical Engineering*, S. Chand and Company Ltd., New Delhi, 2006.  
T2. A. Nagoorkani, *Control Systems*, 2<sup>nd</sup> edition, RBA Publications, Chennai, 2007.

**REFERENCE BOOKS:**

- R1. M.S. Naidu, S. Kamakshaiah, *Basic Electrical Engineering*, Tata McGraw Hill Publishing Company Ltd, New Delhi, 2009.
- R2. T.K. Nagasarkar and M.S. Sukhija, *Basic Electrical Engineering*, Oxford University Press, New Delhi, 2005.