SREE VIDYANIKETHAN ENGINEERING COLLEGE

(Autonomous)

SreeSainath Nagar, A. Rangampet,517 102

Department of Electrical and Electronics Engineering

Lesson Plan

Name of the Subject : **BASIC ELECTRICAL ENGINEERING**

Class & Semester :II B. Tech (CSE & IT) – I Semester

Name(s) of the faculty Member(s):

S. No.	Topic	No. of periods	Book(s) followed	Topics for Self - Study
UNIT – I: ELECTRICAL CIRCUITS				
1.	Essence of electricity	1	T2 &R2	Network theorems
2.	Basic circuit components	1	T1 &R2	
3.	Electric current , potential difference, EMF , electric power , Ohm's law	1	T1 &R2	
4.	**Tutorial-1**	**1**		
5.	Resistive networks , inductive networks , capacitive networks	1	T1 &R2	
6.	Kirchhoff's laws	1	T1 &R2	
7.	Series- parallel circuits	1	T1 &R2	
8.	**Tutorial-2**	**1**		
9.	Star to delta transformation and delta to star transformation	2	T1 &R2	
10.	Mesh analysis	2	T1 &R2	
11.	**Tutorial-3**	**1**		
12.	Nodal analysis	2	T1 &R2	
13.	Source Transformation Technique, numerical problems and Formative test-1	1	T1 &R2	
14.	**Tutorial-4**	**1**		
Total periods required:		**17**		
UNIT – II: ALTERNATING QUANTITIES				
15.	Principle of AC voltages	1	T1&T2	Analysis of phasor algebra
16.	Wave forms and basic definitions	1	T1 & T2	
17.	RMS and average values of alternating currents, voltages, form factor and Peak factor	1	T1 & T2	
18.	**Tutorial-5**	**1**		
19.	Power factor and concept of power triangle	1	T1 & T2	
20.	Poly phase systems – advantages	1	T1 & T2	
21.	Voltages and currents in balanced star and delta connections	1	T1 & T2	
22.	**Tutorial-6**	**1**		
23.	Advantages of star and delta connections	1	T1 & T2	
24.	Numerical problems and Formative test-2	2	T1 & T2	
25.	**Tutorial-7**	**1**		
Total periods required:		**12**		

UNIT –III: DC MACHINES				
26.	Constructional details of DC generator	1	T1 &R1	Laws of electromagnetic induction
27.	Principle of operation of DC generator	1	T1 & R1	
28.	EMF equation of DC generator	1	T1 & R1	
29.	**Tutorial-8**	**1**		
30.	DC generatorstypes and applications	2	T1 & R1	
31.	Constructional details and Principle of operation of DC Motors	1	T1 & R1	
32.	**Tutorial-9**	**1**		
33.	Significance of back EMF in DC motors, DC motors types and Torque equation of DC motor	2	T1 & R1	
34.	Losses, efficiency and Applications of DC motors and Formative test-3	1	T1 & R1	
35.	**Tutorial-10**	**1**		
Total periods required:		**12**		
UNIT – IV: AC MACHINES				
36.	Principle of operation of transformers	1	T1 & R1	OC & SC test on transformer.
37.	Constructional details of transformers	1	T1 & R1	
38.	Losses, efficiency and regulation of transformers	1	T1 & R1	
39.	**Tutorial-11**	**1**		
40.	Constructional details of Three phase induction motors	1	T1 & R1	
41.	Principle of operation and applications of three phase induction motors	1	T1 & R1	
42.	Principleof operation and applications of split phase induction motors	1	T1 & R1	
43.	**Tutorial-12**	**1**		
44.	Principleof operation and applications of AC servomotor	1	T1 & R1	
45.	Principleof operation and applications of stepper motors and Formative test-4	1	T1 & R1	
46.	**Tutorial-13**	**1**		
Total periods required:		**11**		
UNIT – V: MEASURING INSTRUMENTS AND SPECIAL APPARATUS				
47.	Classification of instruments	1	T1 &T2	Working principle of energy meter
48.	Operating principles	1	T1,T2	
49.	Essential features of measuring instruments	1	T1,T2	
50.	**Tutorial-14**	**1**		
51.	Moving coil permanent magnet and instruments (voltmeters and ammeters)	1	T1,T2	
52.	Moving iron instruments (voltmeters and ammeters)	1	T1,T2	
53.	Digital multi-meters, Voltage stabilizers and uninterruptible power supply (UPS) and Formative test-5	1	R3,R4	
54.	**Tutorial-15**	**1**		
Total periods required:		**08**		
Grand total periods required:		**60**		

TEXT BOOKS:

T1.V.K.Mehta, Rohit Mehta, *Principles of Electrical Engineering*, S. Chand and Company Ltd., New Delhi,2006.

T2.T.K. Nagasarkar, M.S. Sukhija, *Basic Electrical Engineering*, Oxford University Press,New Delhi, 2010.

REFERENCE BOOKS:

R1.B.L. Theraja, A.K. Theraja, *A text book of electrical technology in SI units*, Vol. 2,S.Chand and Company Ltd.,New Delhi, 2013.

R2.D P Kothari, I J Nagarath, *Basic Electrical Engineering*, 3rd edition Tata McGraw HillEducation private Limited, New Delhi, 2012.

R3.Ali Emadi, AbdolhoseinNasiri, Stoyan B. Bekiarov, *Uninterruptible power supplies and active filters*, CRC press, USA,2005.

R4.R.K.Rajput, B*asic electrical and electronics engineering*,Laxmipublications(P)Ltd.,NewDelhi,2007.