

**Name of the Subject** : BASIC ELECTRICAL ENGINEERING (14BT30235)

**Name of the faculty Member:** Ms. N. SRAVANI  
Ms. C. PRASANNA LAKSHMI

**Class & Semester** : II B.Tech & I SEMESTER

S. No.	Topic	No. of periods required (M)	Date(s) covered	No. of periods used (N)	Book(s) followed	Topics for Self - Study
<b>UNIT – I: ELECTRICAL CIRCUITS</b>						
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.	<b>Tutorial-1</b>	<b>1</b>				
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.	<b>Tutorial-2</b>	<b>1</b>				
9.	Star to delta transformation and delta to star transformation	2			T1 &R2	
10.	Mesh analysis	2			T1 &R2	
11.	<b>Tutorial-3</b>	<b>1</b>				
12.	Nodal analysis	2			T1 &R2	
13.	Source Transformation Technique, numerical problems and Formative test-	1			T1 &R2	
14.	<b>Tutorial-4</b>	<b>1</b>				
<b>Total of periods required:</b>		<b>17</b>	<b>Total of periods used:</b>			
<b>UNIT – II: ALTERNATING QUANTITIES</b>						
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.	<b>Tutorial-5</b>	<b>1</b>				
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.	<b>Tutorial-6</b>	<b>1</b>				
23.	Advantages of star and delta	1			T1 & T2	
24.	Numerical problems and Formative test-2	2			T1 & T2	
25.	<b>Tutorial-7</b>	<b>1</b>				

S. No.	Topic	No. of periods required (M)	Date(s) covered	No. of periods used (N)	Book(s) followed	Topics for Self - Study
<b>Total of periods required:</b>		<b>12</b>	<b>Total of periods used:</b>			
<b>UNIT –III: DC MACHINES</b>						
26.	Constructional details of DC generator	1			T1 &R1	electromagnetic induction
27.	Principle of operation of DC generator	1			T1 & R1	
28.	EMF equation of DC generator	1			T1 & R1	
29.	<b>Tutorial-8</b>	<b>1</b>				
30.	DC generators types and applications	2			T1 & R1	
31.	Constructional details and Principle of operation of DC Motors	1			T1 & R1	
32.	<b>Tutorial-9</b>	<b>1</b>				
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.	<b>Tutorial-10</b>	<b>1</b>				
<b>Total of periods required:</b>		<b>12</b>	<b>Total of periods used:</b>			
<b>UNIT – IV: AC MACHINES</b>						
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.	<b>Tutorial-11</b>	<b>1</b>				
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.	Principle of operation and applications of split phase induction motors	1			T1 & R1	
43.	<b>Tutorial-12</b>	<b>1</b>				
44.	Principle of operation and applications of AC servomotor	1			T1 & R1	
45.	Principle of operation and applications of stepper motors and Formative test-4	1			T1 & R1	
46.	<b>Tutorial-13</b>	<b>1</b>				
<b>Total periods required:</b>		<b>11</b>	<b>Total of periods used:</b>			
<b>UNIT – V: MEASURING INSTRUMENTS AND SPECIAL APPARATUS</b>						
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.	<b>Tutorial-14</b>	<b>1</b>				
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	

S. No.	Topic	No. of periods required (M)	Date(s) covered	No. of periods used (N)	Book(s) followed	Topics for Self - Study
54.	Tutorial-15	1				
<b>Total periods required:</b>		<b>08</b>	<b>Total of periods used:</b>			
<b>Grand total periods required:</b>		<b>60</b>	<b>Grand total of periods used:</b>			

**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*, 3<sup>rd</sup> edition TataMcGraw Hill Education private Limited, New Delhi, 2012.

**R3:** Ali Emadi, AbdolhoseinNasiri, StoyanB.Bekiarov, *Uninterruptible powersupplies and active filters*, CRC press, USA, 2005.

**R4:** R.K.Rajput, *Basic electrical and electronicsengineering*, Laxmipublications(P)Ltd., New Delhi, 2007.

**Signature of the faculty Member    signature of the coordinator    Signature of the HOD**