



INSTITUTE OF AERONAUTICAL ENGINEERING

(AUTONOMOUS)

Dundigal, Hyderabad - 500 043

CIVIL ENGINEERING

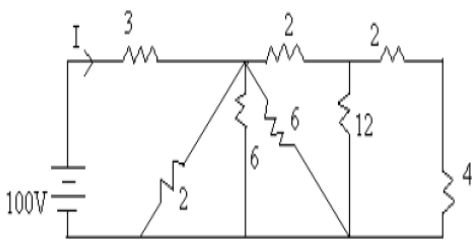
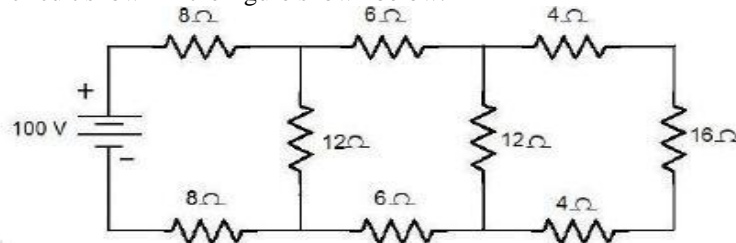
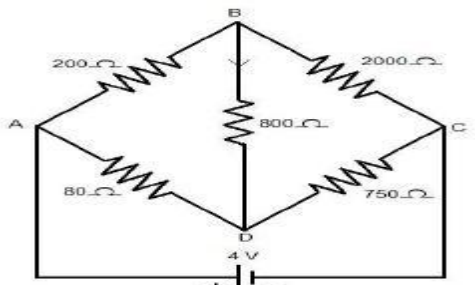
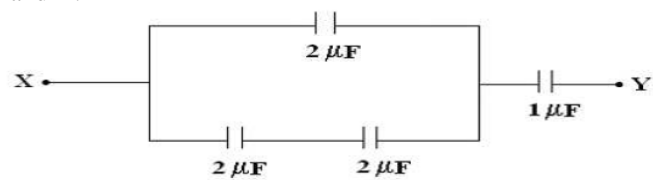
ASSIGNMENT

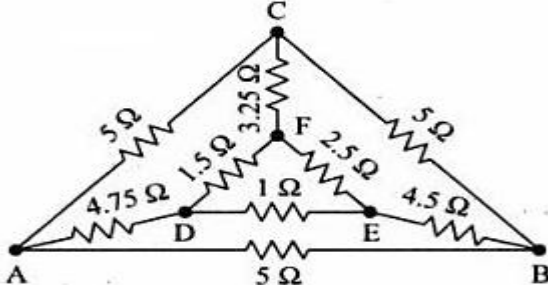
Course Name	:	Electrical and Electronics Engineering
Course Code	:	A30203
Class	:	II B. Tech I Semester
Branch	:	Civil Engineering
Year	:	2016 – 2017
Course Faculty	:	Mr. A Sathishkumar, Assistant Professor,

OBJECTIVES

Electrical And Electronics Engineering course is belongs to basic knowledge of high voltage and low voltage Circuits. This course introduces the basic concepts of circuit analysis which is the Foundation for all subjects of the Electrical Engineering discipline. The course deals with the basic analysis of single phase circuits, DC machines, AC machines and principles of indicating instruments. It emphasis basics of electronics, semiconductor devices and their characteristics and operational features

S. No	Question	Blooms Taxonomy Level	Course Outcome
ASSIGNMENT-I UNIT-I (ELECTRICAL CIRCUITS AND INSTRUMENTS) (SHORT ANSWER TYPE QUESTIONS)			
1	Define Ohm's law	Remember	1
2	Mention the limitations of Ohm's Law	Understand	1
3	Define Kirchoff's voltage law and Kirchoff's Current law. State Kirchoff's Current law	Remember	1
4	Write short notes on resistor, capacitor, and inductor with relevant expression	Remember	2
5	Derive the star-delta conversion equations?	Understand	2
6	What is mean by instrument? Write Different types of instruments	Remember	3
7	Define a)Air friction damping b)Fluid friction damping c)Eddy current damping	Understand	1
8	Write Short notes on different types of torques	Remember	1
9	Define a) Voltage b) Current c) Power	Remember	1
10	Give an Examples of Series and Parallel Resistor Networks	Remember	2
(LONG ANSWER QUESTIONS)			
1	A voltage of 200 V is applied to a tapped resistor of 500Ω. Find the resistance between the tapping points connected to a load, needing 0.1A at 25 V. Also	Apply	1

S. No	Question	Blooms Taxonomy Level	Course Outcome
	calculate the Total power consumed		
2	If 3 capacitors of values 2mF, 4mF, 5mF are connected in parallel. Calculate the effective capacitance	Understand	1
3	Determine the current I in the circuit shown in figure. All resistances are in ohms. 	Creating	1
4	Calculate a) the equivalent resistances across the terminals of the supply, b) total current supplied by the source and c) power delivered to 16 ohm resistor in the circuit shown in the figure shown below. 	Apply	1
5	Determine the current through 800 ohm resistor in the network shown in figure 	Apply	1
6	Find the equivalent capacitance of the combination shown figure below across X and Y. 	Understand	1
7	Describe the working principle of permanent magnet moving coil instrument	Apply	3
8	Describe the working principle of moving iron attraction type instrument	Understand	2
9	Discuss about series and parallel networks of resistor, inductor and capacitor.	Apply	1
10	Find the resistance between the A and B by using star delta conversion	Understand	1

S. No	Question	Blooms Taxonomy Level	Course Outcome
			

ASSIGNMENT-II

**UNIT-II
(DC MACHINES)**

(SHORT ANSWER TYPE QUESTIONS)

1	What are the basic parts of a dc generator?	Remember	4
2	Discuss about back emf in DC motor?.	Remember	4
3	Describe the different types of Generators .	Remember	4
4	Discuss about any two types of DC generators	Remember	4
5	What are the applications of DC motors?	Remember	4
6	Describe about Commutator principle of operation.	Understand	4
7	Differentiate between self-excited and separately excited DC machines.	Remember	4
8	Calculate the e.m.f by 4 pole wave wound generator having 65 slots with 12 conductors per slot when driven at 1200 rpm the flux per pole is 0.02 wb.	Remember	4
9	A dynamo has a rated armature current at 250 amps what is the current per path of the armature if the armature winding is lap or wave wound? The machine has 12 poles.	Remember	4
10	Draw the characteristics for DC shunt generator.	Remember	4

(LONG ANSWER QUESTIONS)

1	Describe the principle of operation of DC generator.	Apply	4
2	Derive the equation for induced EMF of a DC machine	Evaluate	5
3	Give the classification of DC generator and explain	Apply	4
4	Derive the torque equation of DC motor	Apply	5
5	Explain construction of dc machine with neat diagram?	Understand	5
6	A 6 pole lap wound dc generator has 600 conductors on its armature flux per pole is 0.02 wb. Calculate i) The speed at which the generator must be run to generate 300v. ii) What would be the speed if the generated were wave wound?	Apply	4
7	An 8-pole, lap wound armature rotated at 350 rpm is required to generate 260v. The use full flux per pole is 0.05 wb if the armature has 120 slots, calculate the number of conductors per slot.	Understand	5
8	A 440v Dc shunt generator has $R_a=0.25$ ohms and $R_{sh}= 220$ ohms while delivering a load current of 50 amps, it has a terminal voltage of 440v determined the generated e.m.f and power developed?	Understand	4
9	A Dc series generator has armature resistance of 0.5 ohms and series field resistance of 0.03 ohms it drives a load of 50 amps. if it has 6 turns/coil and total 540 coils on the armature and is driven at 1500 rpm calculate the terminal voltage at the load. Assume 4-poles, lap type winding, flux pole as 2	Evaluate	5

S. No	Question	Blooms Taxonomy Level	Course Outcome
	mwb and total brush drop as 2V.		
10	Explain three point starter for D.C. Shunt motor.	Apply	5
ASSIGNMENT-III			
UNIT-III			
AC MACHINES			
(SHORT ANSWER TYPE QUESTIONS)			
1	Mention the difference between core and shell type transformers.	Understand	5
2	Does transformer draw any current when secondary is open? Why?	Understand	6
3	Define voltage regulation of a transformer	Remember	6
4	Derive the EMF equation of a transformer..	Remember	6
5	Obtain the condition for maximum efficiency of a transformer	Understand	5
6	Describe the construction of a core type transformer.	Remember	6
7	Discuss about the torque slip characteristics of an Induction motor	Understand	6
8	Differentiate between squirrel cage induction motors and slip ring induction motors.	Remember	7
9	Describe the principle of alternator	Understand	7
10	Why does the rotor in an induction motor rotate?	Understand	7
(LONG ANSWER QUESTIONS)			
1	Describe the construction and operation of single phase transformer.	Create	5
2	Describe the method to perform OC and SC test on a transformer	Evaluate	6
3	A transformer supplied a load of 32A at 415V. If the primary voltage is 3320V, find the following: (a) Secondary volt ampere (b) Primary current(c) Primary volt ampere. Neglect losses and magnetizing current	Evaluate	6
4	A transformer with 40 turns on the high voltage winding is used to step down the voltage from 240V to 120V. Find the number of turns in the low voltage winding. Open circuit and short circuit tests on a 5 KVA, 220/400V, 50 Hz, single phase transformer gave the following results: OC Test: 220V, 2A, 100W (lv side) SC Test: 40V, 11.4A, 200W (hv side) Obtain the equivalent circuit	Analyze	6
5	A 440/110 v transformer has a primary resistance of 0.03 ohms and secondary resistance of 0.02 ohms if iron losses at normal input is 150 watts determine the secondary current at which maximum efficiency will occur and the value of this maximum efficiency at a unity power factor load.	Evaluate	7
6	Describe the working principle and construction of a 3 phase induction motor	Evaluate	7
7	A 6-pole, 50Hz squirrel cage induction motor runs on load at a shaft speed of 970 rpm. Calculate i) Percentage slip ii) The frequency of the induced current in the rotor.	Evaluate	7
8	The emf in the stator of an 8 pole induction motor has a frequency of 50 Hz and that in the rotor is 1.5Hz. At what speed the motor is running and what is the slip?	Remember	6
9	Discuss about synchronous impedance method to find regulation of an alternator	Understand	6
10	Describe the principle and construction of salient pole and non salient pole alternator	Understand	6
ASSIGNMENT-IV			

S. No	Question	Blooms Taxonomy Level	Course Outcome
UNIT-IV			
DIODES AND TRANSISTORS			
(SHORT ANSWER TYPE QUESTIONS)			
1	Explain avalanche breakdown?	Understand	7
2	Differentiate intrinsic and extrinsic semiconductors?	Remember	7
3	Sketch the Energy bands in n-type and p-type semiconductor	Remember	7
4	Define static and dynamic resistance?	Remember	8
5	Discuss importance of Active region?	Understand	8
6	Express importance of Cut in voltage?	Remember	8
7	Design a circuit for transistor as a switch?	Remember	9
8	Define saturation region?	Synthesize	9
9	Derive relationship among α , β ?	Remember	9
10	Explain majority and minority carriers in a semiconductor?	Remember	7
11	Name two applications of a Crystal diode	Remember	7
(LONG ANSWER QUESTIONS)			
1	Explain the theory of PN junction in semiconductors and explain how it acts as diode?	Understand	7
2	Explain different biasing conditions of the PN junction crystal diode	Understand	8
3	Discuss V-I characteristics of a silicon PN junction crystal diode and Analyze the significance of the knee voltage?	Apply	7
4	Analyze the effect of temperature on the volt – ampere characteristics of a diode.	Apply	8
5	Zenar diode works in reverse biased condition. How the Zener diode and its breakdown mechanism work as regulator?	Evaluate	7
6	Describe the Diode current equation.	Apply	8
7	What is the importance of a filter in voltage rectification process	Understand	8
8	Define rectifier? Describe all parameters for Half wave rectifier?	Remember	8
9	Describe all parameters for Centre tapped full wave rectifier?	Understand	8
10	Define rectifier? Describe all parameters for bridge rectifier?	Remember	8
11	Discuss the difference between Half waves; centre tapped full wave and bridge rectifiers.	Apply	7
12	Explain the operation of SCR and its V_I characteristics?	Understand	7
13	Explain the term α and β current gains and their relationship for N-P-N transistor?	Understand	7
14	Explain the operation of NPN and PNP transistor?	Understand	7
15	Illustrate with a diagram, how the BJT transistor acts as an amplifier?	Understand	7
ASSIGNMENT-V			
UNIT-V : CATHODE RAY OSCILLOSCOPE			
(SHORT ANSWER TYPE QUESTIONS)			
1	Explain the function of deflection plates?	Understand	9
2	Explain is the purpose of accelerating anode?	Understand	10
3	Explain the function of vertical plates in CRT?	Understand	10
4	Explain the function of horizontal plates?	Remember	10
5	Discuss the use of Fluorescence?	Remember	9

S. No	Question	Blooms Taxonomy Level	Course Outcome
6	Explain the Principle of dual beam oscilloscope?	Remember	9
7	Explain the principle of sampling oscilloscope?	Understand	9
8	Mention the two modes of operation in dual trace oscilloscope	Remember	10
9	List the Disadvantages of storage cathode ray tube?	Understand	10
10	Define Electric Field?	Remember	9
(LONG ANSWER QUESTIONS)			
1	Give the construction of a Cathode Ray tube using electrostatic focusing and deflection systems and describe the functions of various constituents.	Understand	9
2	Give the construction of a Cathode Ray tube using magnetic focusing and deflection systems and describe the functions of various constituents.	Create	10
3	Write the principle of CRT? Explain the different types of CROs?	Understand	10
4	Explain the Block diagram of CRO with neat sketch?	Create	10
5	Discuss critically functional block diagram of CRT?	Understand	10
6	Explain the applications of CRO?	Create	9
7	Explain the electron gun construction and working?	Understand	9
8	How the magnetic deflection system works in CRT?	Apply	9
9	Explain the Electrostatic deflection system in CRT?	Understand	10
10	Differentiate Electrostatic and magnetic deflection systems?	Evaluate	10
11	Describe the voltage, current and frequency measurements using CROs.	Synthesize	10

Prepared by: Mr. A Sathishkumar, Assistant Professor

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