INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal, Hyderabad -500 043

ELECTRONICS AND COMMUNICATION ENGINEERING

TUTORIAL QUESTION BANK

Course Title	**ELECTRICAL TECHNOLOGY**			
Course Code	**AEE017**			
Programme	**R16**			
Semester	**III**			
Course Type	**Foundation**			
Regulation	**IARE-R16**			
Course Structure	**Lectures**	**Tutorials**	**Practicals**	**Credits**
	3	1	-	4
Course Coordinator	Mr. K Devender Reddy, Assistant Professor, EEE			
Course Faculty	Dr. V C Jagan Mohan, Assistant Professor, EEE Mr. Muralidhar Nayak, Assistant Professor, EEE Mr. A Sathish Kumar, Assistant Professor, EEE			

COURSE OBJECTIVES:

The course should enable the students to:

S. NO	DESCRIPTION
I	Analyze the transient response of RL, RC and RLC circuits for DC excitation.
II	Discuss the configurations of two port networks and evaluate two port network parameters.
III	Understand the classification and design principles of filters and symmetrical attenuators.
IV	Describe the principle of operation and testing methods of DC machines and single phase Transformers.

COURSE LEARNING OUTCOMES:

Students, who complete the course, will have demonstrated the ability to do the following:

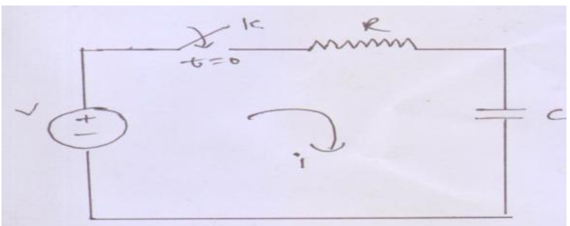
S. No	Description
CAEE017.01	Understand the transient response of series RL and RC circuits by differential and Laplace transform approach.
CAEE017.02	Understand the transient response of series RLC circuit by differential and Laplace transform approach.
CAEE017.03	Explain impedance parameters in two port networks and conversion of impedance parameters into all other parameters.
CAEE017.04	Explain admittance parameters in two port networks and conversion of admittance parameters into all other parameters.

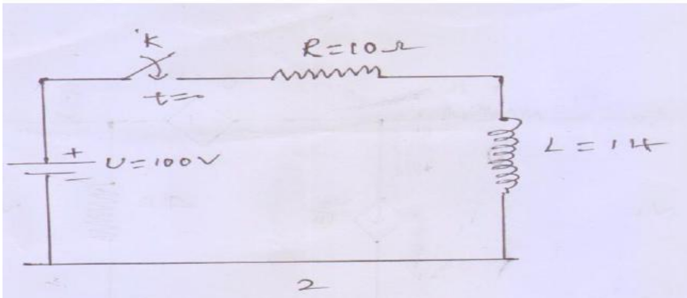
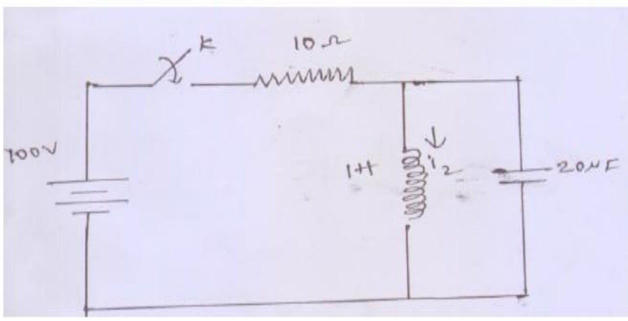
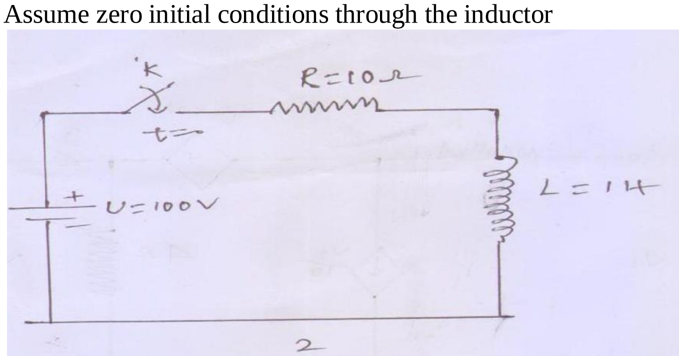
CAEE017.05	Explain ABCD parameters in two port networks and conversion of ABCD parameters into all other parameters.
CAEE017.06	Explain H-parameters in two port networks and conversion of Hybrid parameters into all other parameters.
CAEE017.07	Describe the classification of different types of filters and advantages
CAEE017.08	Describe the classification of pass band and stop band filters and their characteristic impedance.
CAEE017.09	Understand the design of constant 'k' low pass filter and high pass filter and applications
CAEE017.10	Understand the m-derived t-section, band pass filter and band elimination filter and applications.
CAEE017.11	Understand the T-type attenuator, pi- type attenuator, bridged 'T' type attenuator, lattice attenuator.
CAEE017.12	Understand the working principle of DC generator, types of generators and their characteristics.
CAEE017.13	Understand the working principle of DC motor, development of torque and their characteristics to find losses and efficiency.
CAEE017.14	Understand the principle of operation of single phase transformer types and their construction.
CAEE017.15	Determine the losses and efficiency of transformer using open circuit and short circuit test data.
CAEE017.16	Apply the concept of network theorems, DC machines and AC machines to solve real time applications.
CAEE017.17	Process the knowledge and skills for employability and to succeed national and international level competitive examinations.

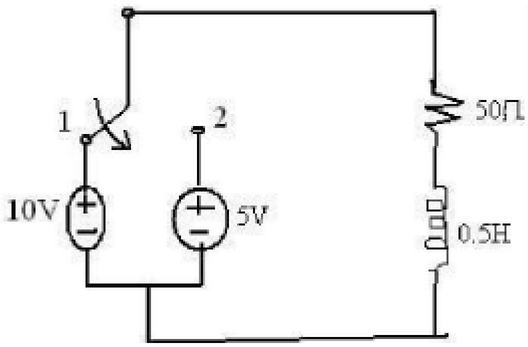
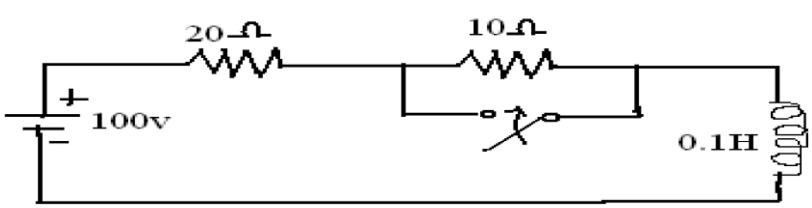
UNIT –I

TRANSIENT ANALYSIS

S. No	QUESTION	BLOOMS TAXONOMY LEVEL	COURSE LEARNING OUTCOMES
PART – A (SHORT ANSWER QUESTIONS)			
1	What is transient response of circuit?	Remember	CAEE017.01
2	What is the significance of initial conditions in a step response of Series R-L and R-C circuit	Remember	CAEE017.01
3	What is mean by steady state condition?	Understand	CAEE017.01
4	Explain initial conditions in a network?	Remember	CAEE017.1
5	Explain initial conditions of basic passive elements?	Understand	CAEE017.01
6	Explain the significance of time constant of series RC circuit?	Understand	CAEE017.01
7	What is meant by step response of circuit?	Understand	CAEE017.01
8	What is meant by driven circuit and un-driven circuit?	Remember	CAEE017.01
9	Define time constant?	Remember	CAEE017.01
10	Define the following terms, i. Rise time ii. Peak time	Remember	CAEE017.01

PART – B (LONG ANSWER QUESTIONS)			
1	Obtain the expression for current i(t) for t>0 in a driven series R-L circuit and draw necessary sketches. Assume D.C excitation using differential equation approach	Understand	CAEE017.01
2	Derive the expression for current i(t) for t>0 in a un driven series R-L circuit and draw necessary sketches. Assume D.C excitation using differential equation approach	Understand	CAEE017.01
3	Obtain the expression for current i(t) for t>0 in a un driven series R-C circuit and draw necessary sketches. Assume D.C excitation using differential equation approach	Understand	CAEE017.01
4	Derive the expression for current i(t) for t>0 in a un driven series R-C circuit and draw necessary sketches. Assume D.C excitation using differential equation approach	Understand	CAEE017.01
6	Obtain the expression for current i(t) for t>0 in a driven series R-L circuit and draw necessary sketches. Assume D.C excitation using Laplace transform method	Understand	CAEE017.01
7	Derive the expression for current i(t) for t>0 in a un driven series R-L circuit and draw necessary sketches. Assume D.C excitation using Laplace transform method	Understand	CAEE017.01
8	Obtain the expression for current i(t) for t>0 in a un driven series R-C circuit and draw necessary sketches. Assume D.C excitation using Laplace transform method	Understand	CAEE017.01
9	Derive the expression for current i(t) for t>0 in a un driven series R-C circuit and draw necessary sketches. Assume D.C excitation using Laplace transform method	Understand	CAEE017.01
10	Obtain the expression for current i(t) for t>0 in a driven series R-L-C circuit and draw necessary sketches. Assume D.C excitation using differential equation approach	Understand	CAEE017.02
PART – C (ANALYTICAL QUESTIONS)			
1	In the network shown in figure, switch k is closed at t=0 with the capacitor uncharged .Find the values of i, di/dt,d^2i/dt^2 at t=0+,for elements values as follows ; V=100v,R=1000ohms ,c=1μf 	Understand	CAEE017.01

2	The switch is closed at t=0. Find values of i, di/dt,d^2i/dt^2,at t=0+ assume initial current of to be zero  	Understand	CAEE017.01
3	In the networks shown in figure switch K is closed and a steady state is reached in the network at t=0, the switch is opened .find an expression for the current in the inductor, i2(t).  	Understand	CAEE017.02
4	Find out the Laplace transform of f(t)=e-at for t≥0	Understand	CAEE017.01
5	Find the Laplace transform of damped sine and cosine functions i.e i. e-at sinwt ii. e-at coswt.	Understand	CAEE017.01
6	Use differential equation approach and the expression for current for series RLC circuit having R= 20 ohms, L= 0.05H and C= 20μF. Assume initial conditions equal to zero.	Understand	CAEE017.02
7	Obtain the expression for the current for a series RL Circuit given below. Assume zero initial conditions through the inductor  	Understand	CAEE017.01

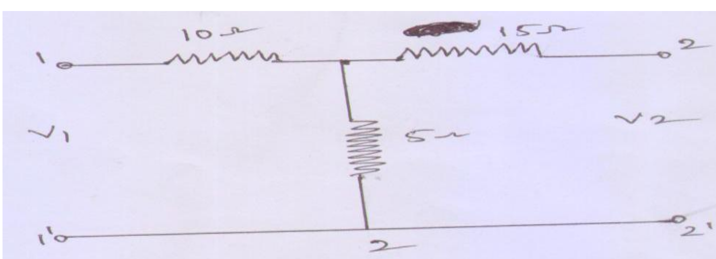
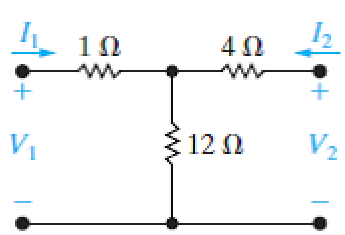
8	In the figure switch is closed at position 1 at t=0. At t=0.5msec, the switch is moved to position 2. Find the expression for the current in both the conditions  	Understand	CAEE017.01
9	For a series RLC circuit having R=5 Ohms, L=10 Henry and C=10µF. And voltage applied V=20 Volts. Find the transient current, Voltage across the resistor. Assume initial current through inductor is zero and initial voltage across capacitor is zero. Use Laplace transform approach	Understand	CAEE017.02
10	For a series RL circuit having R=5 Ohms, L=10 Henry. And voltage applied V=20 Volts. Find the transient current, Voltage across the resistor. Assume initial current through inductor is zero, use differential equation approach.	Understand	CAEE017.01
11	A DC voltage of 100V is applied to the circuit shown in Figure 2 and the switch is kept open. The switch K is closed at t = 0.Compute the complete expression of the current.  	Understand	CAEE017.01

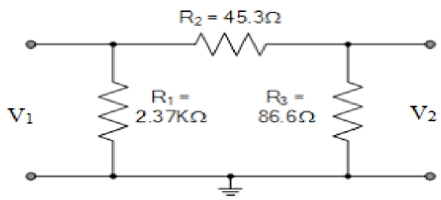
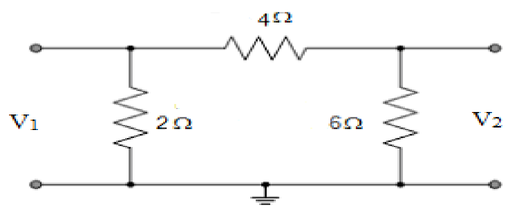
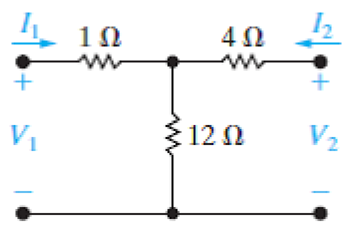
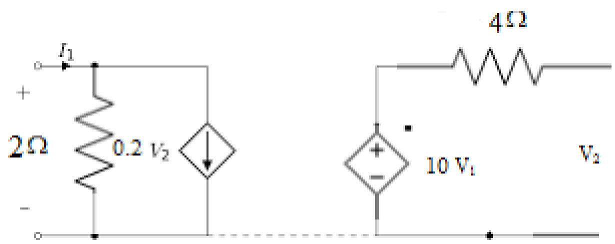
UNIT-II

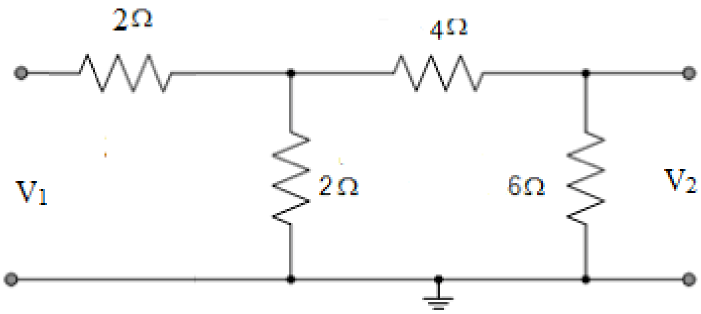
TWO PORT NETWORKS

PART – A (SHORT ANSWER QUESTIONS)

S. No	QUESTION	BLOOMS TAXONOMY LEVEL	COURSE LEARNING OUTCOMES
1	Define two port networks?	Understand	CAEE017.03
2	Define z parameters.	Understand	CAEE017.03
3	Why Z parameters are called open circuit impedance parameters.	Understand	CAEE017.03
4	Define ABCD parameters.	Understand	CAEE017.05
5	Define Y parameters.	Understand	CAEE017.04

6	Define H parameters	Remember	CAEE017.06
7	What are symmetrical networks?	Remember	CAEE017.03
8	What is condition of symmetry for Z parameters?	Remember	CAEE017.03
9	What is condition of symmetry for Y parameters?	Remember	CAEE017.03
10	What is condition of symmetry for ABCD parameters?	Remember	CAEE017.04
	PART – B (LONG ANSWER QUESTIONS)		
1	Define z parameters and draw equivalent circuit	Remember	CAEE017.03
2	Obtain z parameters in terms y parameters	Understand	CAEE017.03
3	Derive the relationship between Y parameters and z parameters.	Understand	CAEE017.03
4	Obtain h parameters in terms y parameters	Understand	CAEE017.04
5	Define y parameters and draw equivalent circuit	Remember	CAEE017.04
6	Obtain ABCD parameters in terms z parameters	Understand	CAEE017.05
7	Define h parameters and draw equivalent circuit	Remember	CAEE017.06
8	Derive condition of symmetry for Z parameters	Understand	CAEE017.03
9	Define ABCD parameters and write applications	Remember	CAEE017.05
10	Show that for series connected two port network, the overall z parameters is equal to the addition of individual z parameters of two port network.	Remember	CAEE017.03
11	Show that for parallel connected two port network, the overall y parameters is equal to the addition of individual y parameters of two port network.	Remember	CAEE017.04
12	Derive image parameters in terms of open circuit and short circuit impedance.	Understand	CAEE017.03
13	Explain what is the effect on overall Transmission (ABCD) parameters when they are connected in cascade.	Remember	CAEE017.05
	PART – C (ANALYTICAL QUESTIONS)		
1	The parameters of two port network are Z11=20ohms,Z22 =30 ohms,Z12=Z21=10ohm find Y and ABCD parameters of the net work.	Understand	CAEE017.03
2	Find the z-parameters for the network shown in figure 	Understand	CAEE017.03
3	Using definitions, find y-parameters of the two port network shown in figure 	Understand	CAEE017.04

4	Find the transmission parameters for the network shown in figure. 	Understand	CAEE017.05
5	Two networks have been shown in fig. Obtain the transmission parameters of the resulting circuit when both the circuits are in cascade. 	Understand	CAEE017.05
6	Find Image parameters of the given network 	Understand	CAEE017.05
7	Using definitions, find y-parameters of the two port network shown in figure 	Understand	CAEE017.04

8	Find transmission parameters and then obtain image parameters for the given Network 	Understand	CAEE017.05
9	Compute the parameters if 2 Two-port networks are connected in series and parallel	Understand	CAEE017.03
10	Compute the parameters if 2 Two-port networks are connected in Cascade	Understand	CAEE017.05
	UNIT-III		
	FILTERS AND SYMMETRICAL ATTENUATORS		
S. No	**QUESTION**	**BLOOMS TAXONOMY LEVEL**	**COURSE LEARNING OUTCOMES**
	PART – A (SHORT ANSWER QUESTIONS)		
1	Define cut-off frequency of a filter.	Understand	CAEE017.07
2	Define filter	Remember	CAEE017.07
3	What is constant –k section?	Remember	CAEE017.09
4	Write Application of filters.	Remember	CAEE017.07
5	Define Neper?	Remember	CAEE017.07
6	Define stop band.	Remember	CAEE017.08
7	Define pass band.	Understand	CAEE017.08
8	Define attenuation band	Remember	CAEE017.08
9	Define low pass filter.	Understood	CAEE017.08
10	Write the formulae for characteristic impedance for T- section	Remember	CAEE017.08
11	Draw π and T filter networks for low pass filter.	Remember	CAEE017.08
12	Draw π and T filter networks for high pass filter.	Remember	CAEE017.08
13	Define band elimination filter.	Understand	CAEE017.08
14	Define characteristic impedance.	Understand	CAEE017.11
15	Express attenuation in decibels and in Neper	Remember	CAEE017.11
16	Classify symmetrical attenuator.	Remember	CAEE017.11
17	Write the expression for design impedances in T attenuator.	Remember	CAEE017.11
18	Draw the circuit of symmetrical π attenuator.	Remember	CAEE017.11
19	Write the expression for design impedances in π attenuator.	Remember	CAEE017.11
20	What are different types of filters?	Remember	CAEE017.07
21	Draw the circuit of symmetrical lattice type attenuator.	Remember	CAEE017.11
22	Draw the circuit of symmetrical Bridged T attenuator.	Remember	CAEE017.11

23	Define decibel and Neper units	Remember	CAEE017.7
24	Write the expression for design equations of symmetrical lattice attenuator	Understand	CAEE017.10
25	Write the expression for design equations of Bridged T attenuator	Understand	CAEE017.11
26	Write the units of attenuation	Remember	CAEE017.11
27	What are desirable characteristics of filter?	Understand	CAEE017.11
28	Write the names of four balanced attenuators	Remember	CAEE017.08
29	What is meant by attenuator network	Remember	CAEE017.11
30	Draw ideal and practical characteristics for different types of filters	Understand	CAEE017.08
	PART – B (LONG ANSWER QUESTIONS)		
1	What is low pass filter derive expression for cutoff frequency of proto type low pass filter in terms of L and C?	Understand	CAEE017.08
2	Obtain design equations of high pass filter	Understand	CAEE017.09
3	Derive design equations for band pass filter	Understand	CAEE017.09
4	For band stop filter show that resonant frequency is the geometric mean of two cut-off frequencies?	Understand	CAEE017.08
5	Derive conditions for m- derived T section of low pass filter	Remember	CAEE017.10
6	Derive expression for cut-off frequency for constant K- high pass filter	Understand	CAEE017.09
7	Describe a proto type T section band stop filter. Determine the formula for designing band pass filter?	Understand	CAEE017.10
8	Obtain design equations for proto type constant K- low pass filter and draw basic T and π sections of proto type low pass filter	Remember	CAEE017.10
9	Derive expression for symmetrical t-attenuator	Remember	CAEE017.11
10	Derive design equations for lattice type symmetrical attenuator	Understand	CAEE017.11
11	Obtain design equations for symmetrical π attenuator	Understand	CAEE017.11
12	Derive design equations for bridged T type attenuator	Understand	CAEE017.11
	PART – C (ANALYTICAL QUESTIONS)		
1	Design a constant –k low pass filter having a cut off frequency 0f 3000hz and nominal impedance of 600 ohms?	Understand	CAEE017.09
2	Design a constant –k high pass filter with a cut-off frequency of 1KHz and a nominal impedance of 500 ohms.	Understand	CAEE017.09
3	Design a band pass filter having a design impedance of 400 ohms and cut off frequencies of 2 KHz and 8 KHz.	Understand	CAEE017.12
4	Design a band elimination filter having a design impedance of 500 ohms and cut off frequencies of f1=1 KHz and f2=6KHz.	Understand	CAEE017.10
5	Design a low pass filter having cut-off frequencies 2 KHz to operate with a terminated with load resistance of 500 ohms.	Understand	CAEE017.09
6	Design a high pass filter with a cut off frequency of 1 KHz with a terminated impedance of 800 ohms.	Understand	CAEE017.09
7	Design a high pass filter having a cut-off frequency of 1 KHz with a load of 600 ohms.	Understand	CAEE017.09

8	Design m-derived high pass filter π section to work into load of 600Ωwith cut-off frequency 318.3Hz and peak attenuation frequency at 300Hz.	Understand	CAEE017.10
9	Design m-derived low pass filter T section to have termination of 600Ω resistance the cut-off frequency is 1.8 kHz and infinite attenuation occur at 2 kHz.	Understand	CAEE017.10
10	Design a proto type low pass filter sections if design impedance R_o= 500Ω and cut-off frequency 2000Hz.	Understand	CAEE017.08
	UNIT-IV		
	DC MACHINES		
S. No	**QUESTION**	**BLOOMS TAXONOMY LEVEL**	**COURSE LEARNING OUTCOMES**
	PART – A (SHORT ANSWER QUESTIONS)		
1	State Fleming's Right Hand Rule.	Remember	CAEE017.12
2	State Fleming's Left Hand Rule,	Remember	CAEE017.12
3	State the basic principle of a DC generator?	Remember	CAEE017.12
4	Describe the basic parts of a dc generator?	Remember	CAEE017.12
5	Write down the EMF equation of a DC generator	Remember	CAEE017.12
6	Explain the different types of DC generators?	Remember	CAEE017.12
7	Draw the circuit diagram of any two types of DC generators.	Remember	CAEE017.12
8	Explain the significance of back EMF in DC motor?	Remember	CAEE017.13
9	List out the different types of DC motor.	Remember	CAEE017.13
10	Write down the torque equation of a DC motor.	Remember	CAEE017.13
	PART – B (LONG ANSWER QUESTIONS)		
1	Explain the working principle and construction details of DC generator with neat diagrams.	Understand	CAEE017.12
2	Give the classification of DC generator and explain with necessary equations	Remember	CAEE017.12
3	Derive the equation for induced EMF of a DC machine.	Understand	CAEE017.12
4	Derive the torque equation of DC motor.	Understand	CAEE017.13
5	Explain the principle of operation of DC motor with neat sketches	Understand	CAEE017.13
6	Discuss the classification of DC Motor and explain with necessary equations	Remember	CAEE017.13
7	Draw the power flow diagram of a DC motor and explain different types of losses that occur in a DC machine?	Remember	CAEE017.13
8	Deduce the condition for maximum efficiency of a DC generator	Understand	CAEE017.12
9	Discuss various methods of speed control of DC shunt motor	Understand	CAEE017.13
10	Explain the Swinburne's test with the help of a neat diagram to find out the efficiency of a DC machine? state advantages and disadvantages	Understand	CAEE017.13
11	With the help of neat sketches explain torque-speed characteristics of the	Understand	CAEE017.13
12	Write applications of different types of DC generators and motors	Remember	CAEE017.12

PART – C (ANALYTICAL QUESTIONS)			
1	Calculate the EMF 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.	Understand	CAEE017.12
2	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.	Understand	CAEE017.12
3	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?	Understand	CAEE017.12
4	An 8-pole, lap wound armature rotated at 350 rpm is required to generate 260v. The useful flux per pole is 0.05 wb if the armature has 120 slots, calculate the number of conductors per slot.	Understand	CAEE017.12
5	The armature of a 6-pole ,600 rpm lap-wound generator has 90 slots, if each coil has 4 turns , calculate the flux per pole is required to generate an EMF of 288 slots.	Understand	CAEE017.12
6	A 440v Dc shunt generator has Ra=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 EMF and power developed?	Understand	CAEE017.12
7	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 mwb and total brush drop as 2v.	Understand	CAEE017.12
8	A30 KW, 300v dc shunt generator has armature and field resistances of 0.05 ohms and 100 ohms respectively. Calculate the total power developed by the armature when it is delivered full load output	Understand	CAEE017.12
9	A compound generator is to supply a load of 250 lamps each rated at 100w, 250 V. The armature, series and shunt windings have resistances of 0.06 respectively. Determine the generated EMF when machine is connected in i) long shunt ii) Short shunt. Take drop per brush as 1v	Understand	CAEE017.12
10	A 4-pole lap wound dc shunt generator has a useful flux per pole of 0.07 wb. The armature winding consists of 220 turns, each of 004 ohms resistance. Calculate the terminal voltage when running at 900 rpm if the armature current is 50 amps.	Understand	CAEE017.12
11	A 4 pole, lap wound DC motor has 540 conductors. Its speed is found to be 1000 r.p.m. When it is made to run light. The flux per pole is 25 mWb. It is connected to 230 V DC supply. The armature resistance is 0.8Ω. Calculate. i) Induced EMF ii) Armature current iii) Stray losses iv) Lost torque	Understand	CAEE017.13
12	A 4 pole, 250 V, DC series motor has a wave connected armature with 200 conductors. The flux per pole is 25 mWb when motor is drawing 60 A from the supply. Armature resistance is 0.15Ω while series field winding resistance is 0.2Ω. Calculate speed under this condition.	Understand	CAEE017.13

UNIT-V			
SINGLE PHASE TRANSFORMERS			
S.No.	**QUESTION**	**BLOOMS TAXONOMY LEVEL**	**COURSE LEARNING OUTCOME**
PART – A (SHORT ANSWER QUESTIONS)			
1	Mention the difference between core and shell type transformers.	Understand	CAEE017.14
2	Explain the significance of laminating the core in a transformer?	Understand	CAEE017.14
3	Write the EMF equation of a transformer and define each term.	Remember	CAEE017.14
4	Does the transformer draw any current when secondary is open? Why?	Understand	CAEE017.14
5	Define voltage regulation of a transformer.	Remember	CAEE017.14
6	List out the applications of step-up & step-down transformer?	Remember	CAEE017.14
7	How transformers are classified according to their construction?	Remember	CAEE017.14
8	Define transformation ratio	Remember	CAEE017.14
9	Define voltage regulation of a transformer.	Remember	CAEE017.14
10	Explain mutual induction principle	Remember	CAEE017.14
PART – B (LONG ANSWER QUESTIONS)			
1	Explain the working principle and construction details of transformer with neat diagrams.	Understand	CAEE017.14
2	Derive the EMF equation of a transformer.	Understand	CAEE017.14
3	Compare between core type and shell type trans formers	Remember	CAEE017.14
4	Explain the principle of working of single phase transformer on no load condition. Also explain the nature of no load current	Understand	CAEE017.14
5	Explain the different type of losses in a Transformer	Remember	CAEE017.15
6	Obtain the condition for maximum efficiency of a transformer	Understand	CAEE017.15
7	Explain the OC and SC test of a single phase transformer	Understand	CAEE017.15
8	Obtain the equivalent circuit of a single phase transformer	Understand	CAEE017.15
9	Draw the phasor diagram of a single phase transformer under lagging power factor load	Understand	CAEE017.14
10	Draw the phasor diagram of a single phase transformer under leading power factor load	Understand	CAEE017.14
PART – C (ANALYTICAL QUESTIONS)			
1	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.	Understand	CAEE017.14
2.	A 125 KVA transformer having primary voltage of 2000V at 50 Hz has 182 primary and 40 secondary turns. Neglecting losses, calculate: i) The full load primary and secondary currents. ii) The no-load secondary induced EMF. iii) Maximum flux in the core.	Understand	CAEE017.14
3	A single phase transformer has 50 primary and 1000 secondary turns. Net cross sectional area of the core is 500 cm2. If the primary winding is connected to 50 Hz supply at 400 V, Calculate the value of Maximum flux density on core and the EMF induced in the secondary.	Understand	CAEE017.14

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.	Understand	CAEE017.15
5	A single phase 50Hz transformer has 80 turns on the primary winding and 280 in the secondary winding. The voltage applied across the primary winding is 240 V. Calculate (i) the maximum flux density in the core (ii) Induced EMF in the secondary winding. (iii) The net cross sectional area of the core can be taken 200cm2.	Understand	CAEE017.14
6	A 5KVA, 500/250V, 50 Hz, single phase transformer gave the following readings, O.C. Test: 200V, 1A, 50W -- -- -- -- -- -- -- L.V side open S.C. Test: 25V, 10A, 60W -- -- -- -- -- -- -- L.V side shorted Determine, i) The efficiency on full load, 0.8 lagging p.f ii) The voltage regulation on full load, 0.8 lagging power factor	Understand	CAEE017.15
7	A 15kVA 2400-240-V, 60 Hz transformer has a magnetic core of 50-cm2 cross section and a mean length of 66.7 cm. The application of 2400 V causes magnetic field intensity of 450 AT/m (RMS) and a maximum flux density of 1.5 T. Determine i. The turn's ratio ii. The number of turns in each winding iii. The magnetizing current	Understand	CAEE017.14
8	The EMF per turn of a 1- φ, 2200/220 V, 50 Hz transformer is approximately 12V. Calculate i) The number of primary and secondary turns, and ii) The net cross-sectional area of core for a maximum flux density of 1.5 T	Understand	CAEE017.14
9	The efficiency of a 400 KVA, single phase transformer is 98.77% when delivering full-load at 0.8 pf lagging and 99.13% at half load at unity power factor calculate, i. iron losses ii. full load copper losses.	Understand	CAEE017.15
10	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.	Understand	CAEE017.15

Prepared by:
Mr. K Devender Reddy, Assistant Professor, EEE
Dr. V C Jagan Mohan, Assistant Professor, EEE
Mr. Muralidhar Nayak, Assistant Professor, EEE
Mr. A Sathish Kumar, Assistant Professor, EEE

HOD, ECE