INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal, Hyderabad - 500 043

ELECTRICAL AND ELECTRONICS ENGINEERING

QUESTION BANK

Course Name	:	**NETWORK THEORY**
Course Code	:	A40213
Class	:	II-B.TECH II SEM
Branch	:	Electrical and Electronics Engineering
Year	:	2016 - 2017
Course Coordinator	:	**Ms. Lekha Chandran, Associate Professor**
Course Faculty	:	**Ms. Lekha Chandran, Associate Professor**

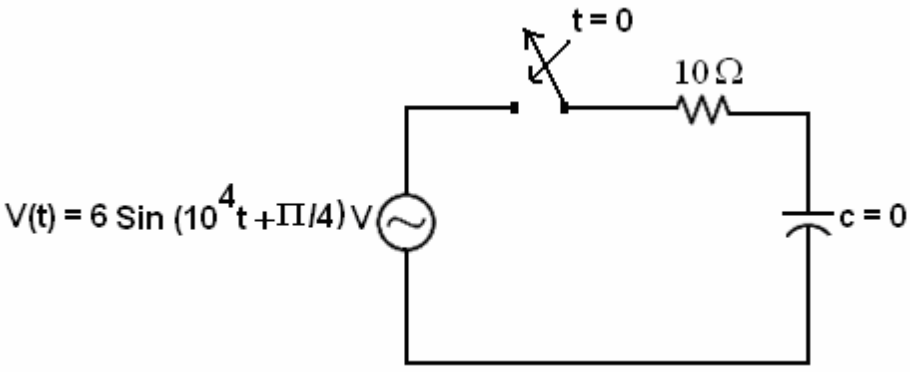
OBJECTIVES:

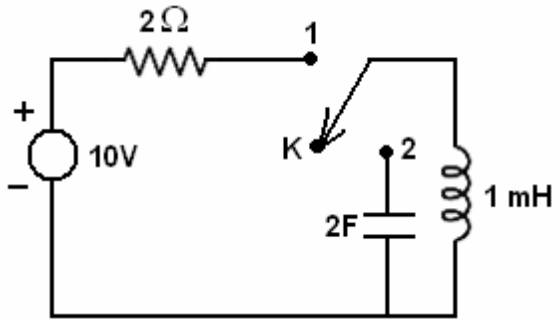
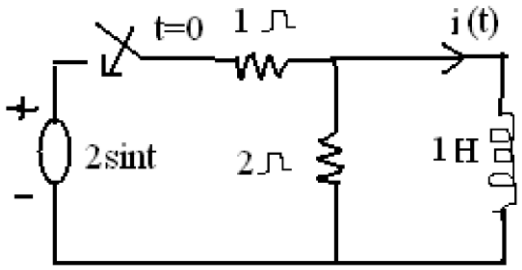
This course introduces the basic concepts of network theory which is the foundation for all subjects of the electrical engineering discipline. The emphasis of this course if laid on the basic analysis of circuit which includes three phase circuits, transient analysis of DC and AC circuits , network functions, two port network parameters, Fourier analysis of ac circuits, Design and analysis of filters.

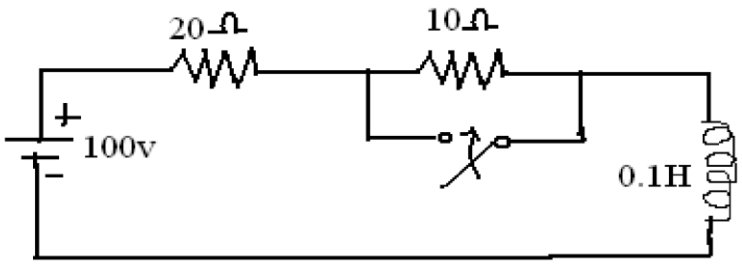
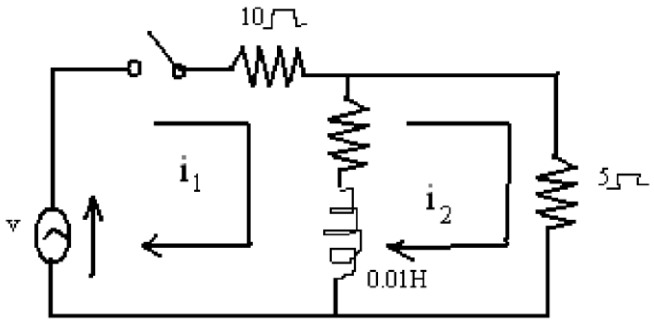
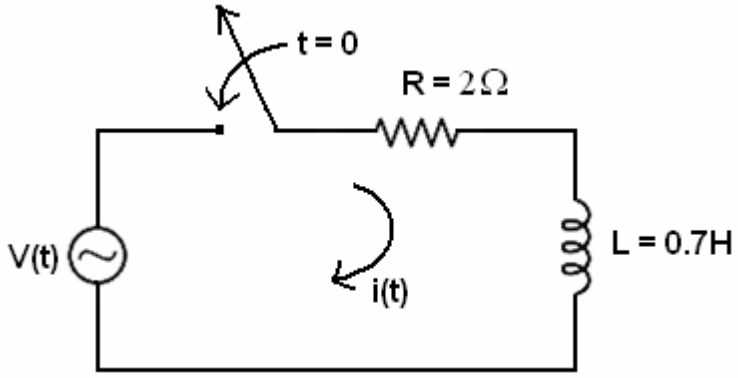
S. No	Question	Blooms Taxonomy Level	Course Outcome
	UNIT - I **Electrical circuits and Instruments** **SHORT ANSWER TYPE QUESTIONS**		
1	What are the advantages of a three phase system over a single phase system	Understand	1
2	Obtain the relationship between line and phase voltage in a 3-phase balanced star connected system.	Remember	1
3	Obtain the relationship between line and phase voltage in a 3-phase balanced delta connected system.	Remember	1
4	Write the equations of line voltages in a balanced 3 phase system?	Remember	1
5	Obtain the relationship between line and phase current in a 3-phase balanced star connected system.	Understand	1
6	Obtain the relationship between line and phase currents in a 3-phase balanced delta connected system.	Remember	1
7	Remember the expression for power factor in an ac circuit?	Remember	1
8	Write the expression for active power in a balanced 3 phase circuit?	Remember	1
9	Write the expression for reactive power in a balanced 3 phase circuit?	Understand	1
10	Write the minimum number of wattmeters required for measuring 3 phase power?	Remember	1
11	Write the expression for total power in a balanced 3 phase circuit?	Remember	1

S. No	Question	Blooms Taxonomy Level	Course Outcome
12	Write down the expression for power factor in two wattmeter method?	Remember	1
13	Write down the relation between the readings of two wattmeters when the power factor is zero?	Understand	1
14	Write the value of neutral current in a balanced 3 phase system.	Remember	1
15	Define unbalanced loads.	Understand	1
	LONG ANSWER QUESTIONS		
1	What is phase sequence? Explain its significance. What is the difference between RYB phase sequence and RBY phase sequence?	Apply	1
2	Derive the relationship between line and phase quantities in a 3-phase balanced, Star connected system.	Understand	1
3	Derive the relationship between line and phase quantities in a 3-phase Delta connected system balanced delta connected system.	Understand	1
4	Three identical impedances of (3+j4) ohm are connected in delta. Find an equivalent star network such that the line current is the same when connected to the same supply.	Apply	1
5	Derive the expressions for wattmeter readings in two wattmeter method with balanced star connected load.	Understand	1
6	On a symmetrical 3-phase system, phase sequence RYB, a capacitive reactance of 8 is across YB and a coil (R+jX) cross RY. Find R and X such that Iy =0	Apply	1
7	Derive the formula for power factor in two wattmeter method.		1
8	Three identical resistances are connected in a star fashion against a balanced three phase voltage supply. If one of the resistance is removed, how much power is to be reduced?	Apply	1
9	Explain the effect of power factor on wattmeter readings in two wattmeter method?	Understand	1
10	Explain how reactive power can be measured in three phase circuits?		1
11	Three identical impedances of (3+j4) ohm are connected in star. Find an equivalent delta network such that the line current is the same when connected to the same supply.	Apply	1
12	Derive the relationship between line and phase voltage in a 3-phase balanced delta connected system	Understand	1
13	Explain a balanced 3 phase system star connected and delta connected system?	Understand	1
14	Derive the relationship between line and phase current in a 3-phase balanced star connected system.	Understand	1
15	Derive the relationship between line and phase voltage in a 3-phase balanced delta connected system.	Understand	1
	ANALYTICAL QUESTIONS		
1	A three phase balanced delta connected load of (10+j8) ohm is connected across a 400V, 3-Ø balanced supply. Determine the phase currents and line currents. Assume the phase of sequence to be RYB. Also calculate the power drawn by load.	Apply	1
2	Three impedance each 5 +j12 ohm is connected in star are connected to a 220 V three phase, 50 HZ supply. Calculate the line currents and the power drawn by the circuit	Apply	1

S. No	Question	Blooms Taxonomy Level	Course Outcome
3	A three phase balanced delta connected load of (4+j8) ohm is connected across a400V, 3-Ø balanced supply. Determine the phase currents and line currents. Assume the phase of sequence to be RYB. Also calculate the power drawn by load.	Apply	1
4	A balanced 3-phase star connected load of 200 kW takes a leading current of 150 amps with a line voltage of 1200 V at 50 Hz. What are the circuit constants of the load per phase?	Apply	1
5	A 3-phase 500 V motor operates at a power factor of 0.4 and takes an input power of 30 kW. Two watt meters are employed to measure the input power. Find readings on each instrument	Apply	1
6	A balanced three phase is connected to balanced 3 - phase power system. The line voltage is 480 volts and the line current is 10 A. the angle of the phase impedance of the load 60. Find the complex power and real power absorbed by the load	Apply	1
7	Two wattmeter's are used to measure power in a 3-phase three wire load. Determine the total power, power factor and reactive power, if the two wattmeter's read i) 1000W each, both positive ii) 1000W each, but of opposite sign	Apply	1
8	Three star connected impedances 5030, 4060, 4060 ohms are connected to a 400V, 3-Phase supply. determine the line currents and the two watt meter readings when power is measured by 2 watt meter method and abc is the phase sequence	Apply	1
9	A star connected load of $Z_R = 6\Omega$, $Z_Y = j5\Omega$, $Z_B = j7\Omega$ is supplied by a 400V, 3-Ø symmetrical supply. Determine the line currents. The phase sequence is RYB	Apply	1
10	Three delta connected impedances 5000, 4060, 4060 ohms are connected to a 400V, 3-Phase supply. determine the line currents and the two watt meter readings when power is measured by 2 watt meter method and abc is the phase sequence	Apply	1
11	Two wattmeter's are used to measure power in a 3-phase three wire load. Determine the total power, power factor and reactive power, if the two wattmeter's read i) 5000W each, both positive ii) 1000W each, but of opposite sign	Apply	1
12	A balanced 3-phase delta connected load of 200 kW takes a leading current of 150 amps with a line voltage of 1200 V at 50 Hz. What are the circuit constants of the load per phase?	Apply	1
13	Three identical impedances of (8+j4) ohm are connected in delta. Find an equivalent delta network such that the line current is the same when connected to the same supply	Apply	3
14	A three phase balanced delta connected load of (8+j10) ohm is connected across a400V, 3-Ø balanced supply. Determine the phase currents and line currents. Assume the phase of sequence to be RYB. Also calculate the power drawn by load.	Apply	1
15	Two wattmeter's are used to measure power in a 3-phase three wire load. Derive he equation to measure power factor. Determine the total power, power factor and reactive power, if the two wattmeter's read i) 200000W each, both positive ii) 2000W each, but of opposite sign	Apply	3
UNIT – II **DC and AC transient analysis** **SHORT ANSWER TYPE QUESTIONS**			
1	Explain why the current in a pure inductance cannot change in zero time	Remember	2
2	Explain why the voltage across a capacitor cannot change instantaneously	Remember	2
3	What is the significance of time constant of R-L circuit?	Remember	2
4	What are the different ways of defining time constant	Remember	2

S. No	Question	Blooms Taxonomy Level	Course Outcome
5	What are initial conditions	Remember	2
6	Distinguish between steady state and transient response	Understand	2
7	What is mean by steady state condition?	Remember	2
8	Explain initial conditions in a network?	Remember	2
9	Explain initial conditions of basic passive elements?	Remember	2
10	What is the significance of initial conditions in a step response of r-l and r-	Remember	2
11	What is meant by step response of circuit?	Remember	2
12	What is mean by steady state condition?	Remember	2
	LONG ANSWER QUESTIONS		
1	Distinguish between steady state and transient response of electric circuits.	Apply	2
2	Derive the expression for i(t) of a R-L series circuit when DC voltage is applied to it at t=0 by closing the switch. Draw the response curve i(t) vs t. define time constant of R-L series circuit	Apply	2
3	Derive the expression for i (t) and voltage across a capacitor Vc(t) for series R-C circuit with D.C voltage applied to it at t=0.Explain about the time constant of R-C circuit	Understand	2
4	Derive the transient response for series RLC circuit for DC excitation.	Understand	2
5	Derive the transient response for series RL circuit for sinusoidal excitation.	Understand	2
6	Derive the transient response for series RC circuit for sinusoidal excitation.	Understand	2
7	Derive the transient response for series RLC circuit for sinusoidal excitation.	Understand	2
8	Compare the classical and Laplace transform methods of solution of the network	Understand	2
9	A series RL circuit with R = 50 ohms and L = 0.2 H has a sinusoidal voltage source V = 150 (500*Sint* φ+ volts applied at a time when φ=0. Find the expression for the total current. Use Laplace transforms method	Apply	2
10	A series R C circuit with R = 100 Ω and C = 25 μF has a sinusoidal excitation V(t) = 250 Sin 500t. Find the total current assuming that the capacitor is initially uncharged	Apply	2
11	For the circuit shown in Figure determine the particular solution for i(t) through the circuit. Assume zero initial conditions 	Apply	2

S. No	Question	Blooms Taxonomy Level	Course Outcome
12	A series RL circuit with R = 50 ohms and L = 0.2 H has a sinusoidal voltage source V = 150 (500*Sint* φ+ volts applied at a time when φ=0. Find the expression for the total current. Use Laplace transforms method	Apply	2
13	A series RC circuit with R = 50 ohms and C = 2 micro farad has a sinusoidal voltage source V = 150 (500*Sint* φ+π/3) volts applied at a time when φ=0. Find the expression for the total current. Use Laplace transforms method	Apply	2
14	A dc voltage of 20V is applied in a RL circuit where R = 5 and L = 10H. Find i. The time constant ii. The maximum value of stored energy	Apply	2
15	A Sinusoidal Voltage of 12 sin 8 t Volts is applied at t = 0 to a RC series of R= 4Ω and L = 1 H. By Laplace transform method determine the circuit current i (t) for. Assume zero initial condition	Apply	2
	ANALYTICAL QUESTIONS		
1	For the circuit given in Figure steady state conditions are reached for the switch K in position '1'. At t = 0, the switch is changed to position 2. Use the time domain method to determine the current through the inductor for all t≥0 . 	Apply	2
2	Find i (t) in the circuit for the following figure Use Laplace method 	Apply	2
3	A dc voltage of 100V is applied in the circuit shown in figure a and the switch is kept open. The switch K is closed at t = 0. Find the complete expression for the current	Evaluate	2

S. No	Question	Blooms Taxonomy Level	Course Outcome
			
4	In the two mesh network shown in fig, the switch is closed at t=0 and the voltage source is given by V=150 sin (1000t) V. Find the currents i1 and i2 	Understand	2
5	A Sinusoidal Voltage of 12 sin 8 t Volts is applied at t = 0 to a RL series of R= 5Ω and L = 1 H. By Laplace transform method determine the circuit current i (t) for. Assume zero initial condition	Apply	2
6	A Sinusoidal Voltage of 12 sin 8 t Volts is applied at t = 0 to a RC series of R= 5Ω and C = 1 uF. Determine the circuit current i (t) for. Assume zero initial condition	Remember	2
7	For the circuit given below in Figure.2, the applied voltage is V(t) = 10 Sin(200t+60^0). Find the current through the circuit for t ≥ 0. Assume zero initial condition. Use time domain approach 	Apply	2
8	In the circuit shown determine the complete solution for the current, when the switch is closed at t=0. Aopplied voltage is v(t) = 400 cos (500t + $\pi/4$) .	Evaluate	2

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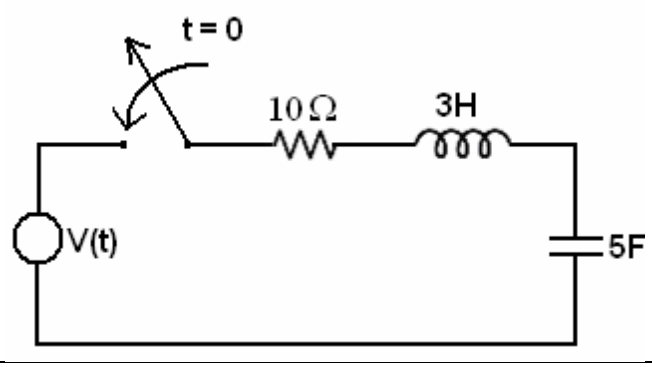
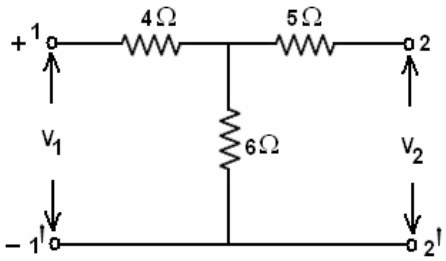
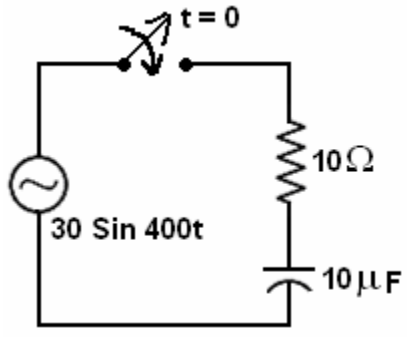
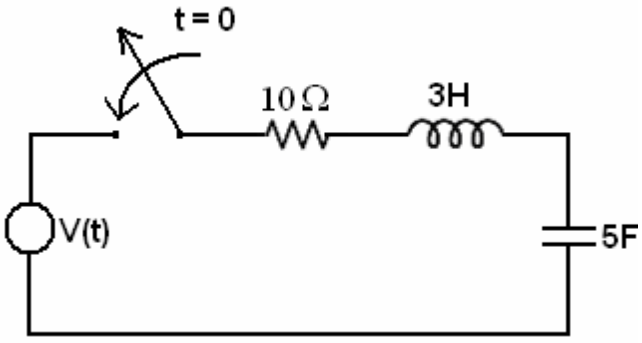
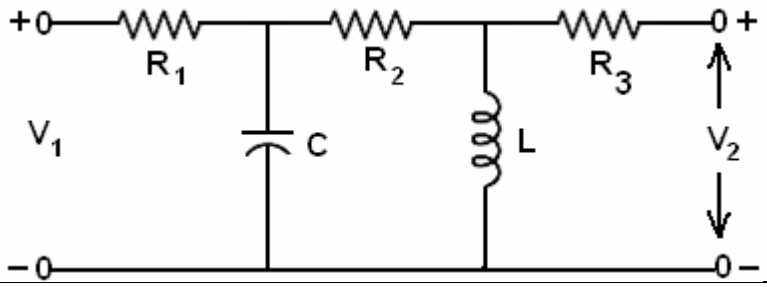
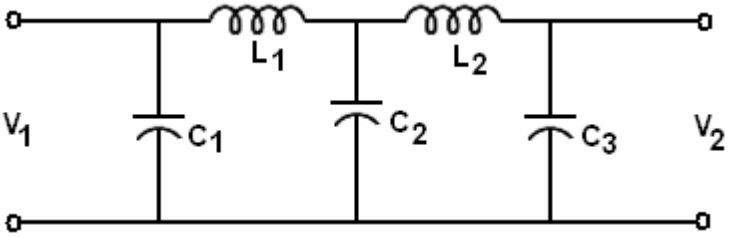
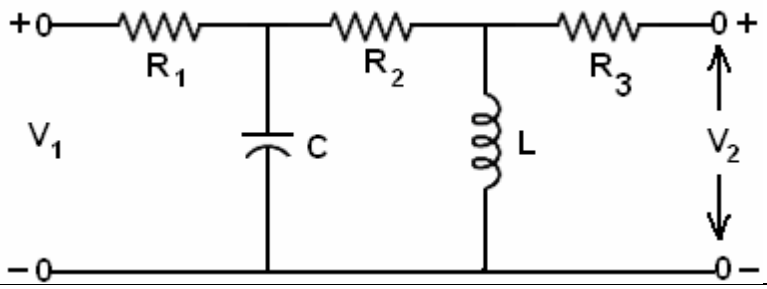
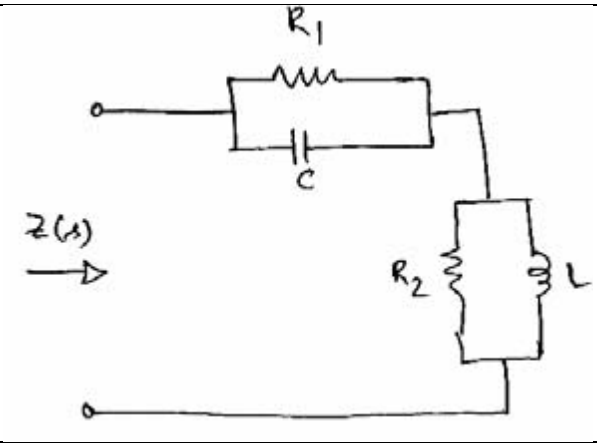
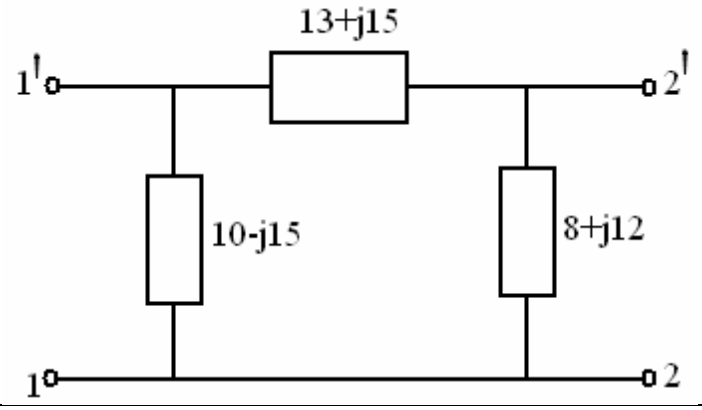
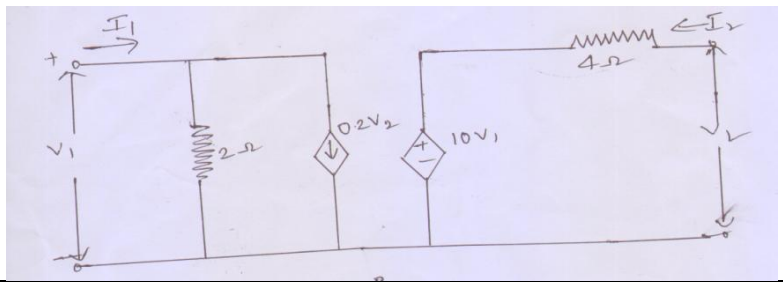
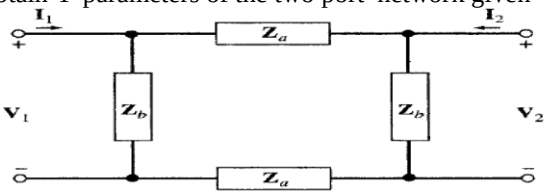
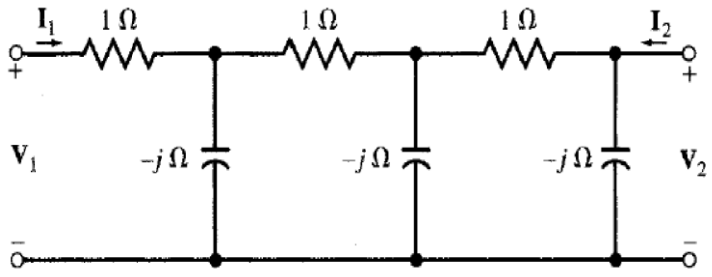
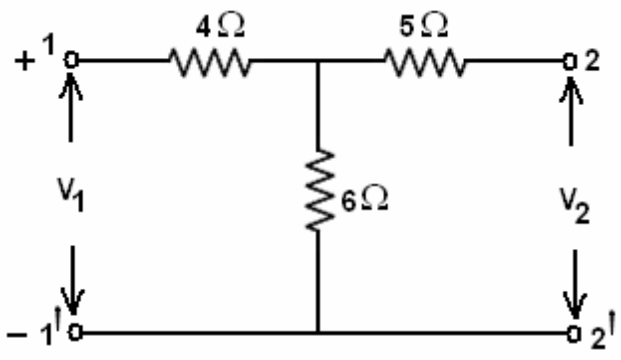
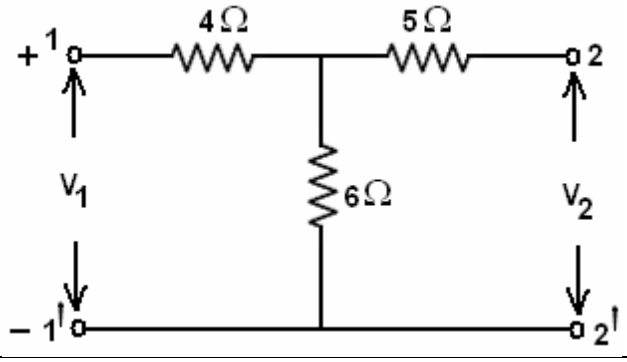
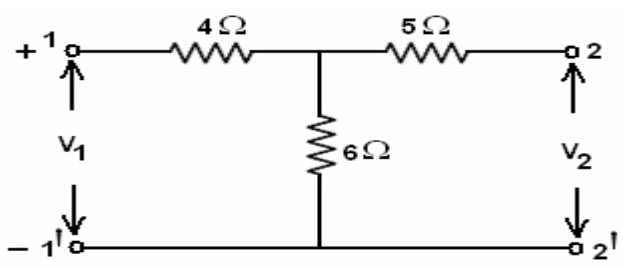
			
9	What is meant by driven circuit and un-driven circuit?	Apply	2
10	Define time constant?	Apply	2
11	Explain time constant significance in Series RL circuit?	Remember	2
12	Define 1) Rise time 2) Peak time	Apply	2
	UNIT – III **Network functions** **SHORT ANSWER TYPE QUESTIONS**		
1	Explain the concept of complex frequency	Understand	3
2	Define Neper frequency	Understand	3
3	Define Radian frequency	Remember	3
4	Define damped sinusoid	Remember	3
5	Obtain the transform representation of a series RLC circuit	Understand	3
6	Obtain the transform representation of a parallel RLC circuit	Remember	3
7	Obtain the transform impedance of an inductor	Understand	3
8	Obtain the transform impedance of a capacitor	Remember	3
9	What is a driving point function? Explain with one example	Understand	3
10	Explain any two necessary conditions for driving point functions	Understand	3
11	What is a transfer function? Give one example	Remember	3
12	Explain any two necessary conditions for transfer functions	Understand	3
13	According to Routh Criteria when a network is said to be stable?	Remember	3
14	Find the stability of the network with transfer function Q(s) =10s/(s+2)(s+5) using pole zero plot	Understand	3
15	Find the stability of the network with transfer function Q(S) =40S/S3 +2S2+8S+1 using pole zero plot	Remember	3
16	The transform voltage V(s) of a network is given by V(s) =4s/(s+2)(s2+2s+2). Plot its pole-zero diagram	Remember	3
17	For the given network function draw pole zero diagram I(s) = 5S / (S+1)(s2+4S+8)	Evaluate	3

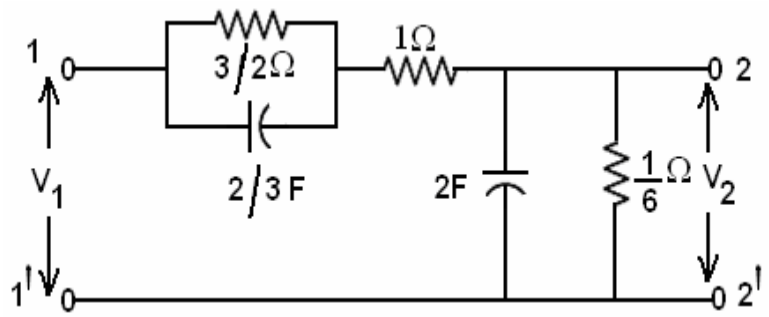
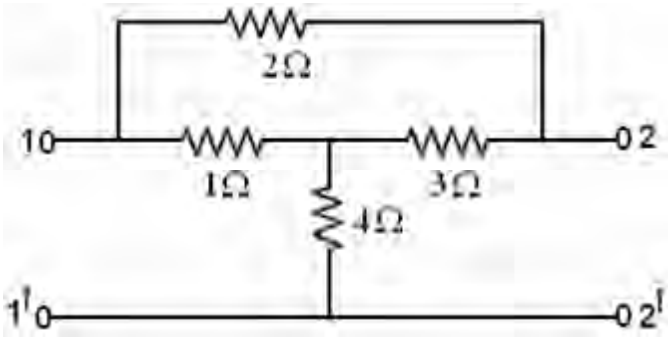
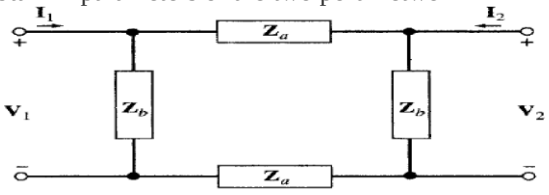
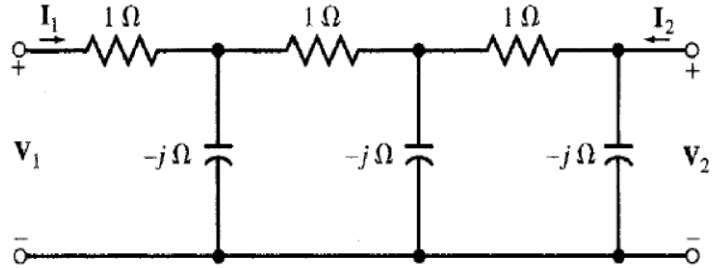
S. No	Question	Blooms Taxonomy Level	Course Outcome
18	The Laplace transform of a voltage v(t) is V(s)=4(s+1)/(s+2)(s+3). Draw poles and zeros of this function.	Evaluate	3
	LONG ANSWER QUESTIONS		
1	What is a pole-zero plot? What is its significance? Explain time domain behavior from pole zero plot.	Create	3
2	Define and explain the following : port, driving point functions And Transfer functions	Evaluate	3
3	What is a transfer function? Explain the necessary conditions for transfer functions	Evaluate	3
4	What is a driving point function? Explain the necessary conditions for driving point functions	Analyze	3
5	According to Routh Criteria when a network is said to be stable?	Evaluate	3
6	The Laplace transform of a voltage v(t) is V(s)=4(s+1)/(s+2)(s+3). Draw poles and zeros of this function and determine v(t) using pole-zero plot	Evaluate	3
7	The transform voltage V(s) of a network is given by V(s) =4s/(s+2)(s2+2s+2) plot its pole-zero diagram and hence obtain v(t)	Evaluate	3
8	Find the stability of the network Q(S) =40S/S3 +2S2+8S+1	Remember	3
9	Find Y parameters for the above network shown in Figure 	Understand	3
10	For the given network function draw pole zero diagram and hence obtain the time domain response i(t) if I(s) = 5S / (S+1)(s2+4S+8)	Understand	3
11	Explain the transfer functions of two port networks	Evaluate	3
12	Obtain the value of i(t). Assume no initial charge in the capacitor at time t=0. 	Remember	3
13	Draw the transformed network for the given circuit	Understand	3

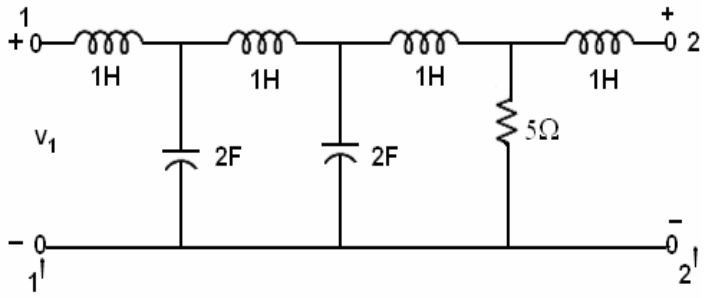
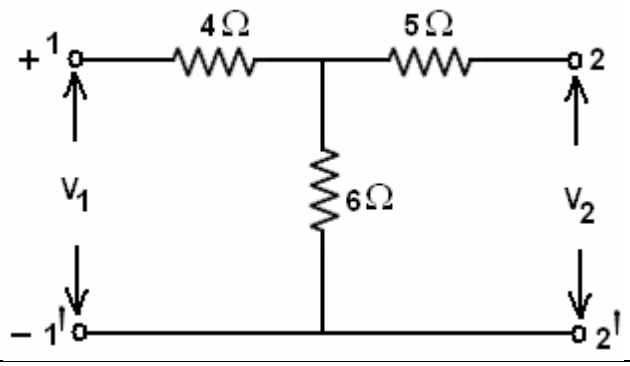
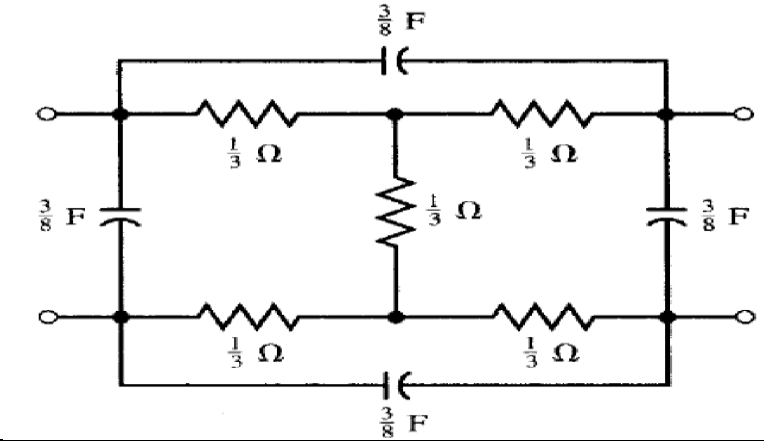
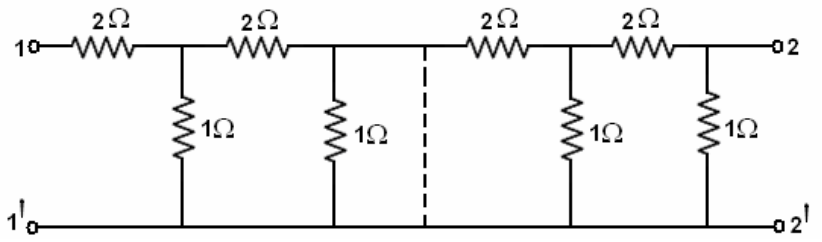
S. No	Question	Blooms Taxonomy Level	Course Outcome
			
14	The Laplace transform of a voltage v(t) is V(s)=4(s+1)/(s+2)(s+3). Draw poles and zeros of this function and determine v(t) using pole-zero plot	Understand	3
15	Find the stability of the network Q(S) =40S/S3 +2S2+8S+1	Understand	3
	ANALYTICAL QUESTIONS		
1	For the network shown in the figure below determine the transfer functions G21 (S) and Z21(S). Also find Z11(S) 	Evaluate	3
2	Find the transfer function V2(S)/V1(S)for the circuit in Figure 	Evaluate	3
3	For the two port network shown in the Figure find G12[V2(S)/V1(S)] 	Evaluate	3
4	Find the transfer impedance of the following circuit shown in figure	Evaluate	3

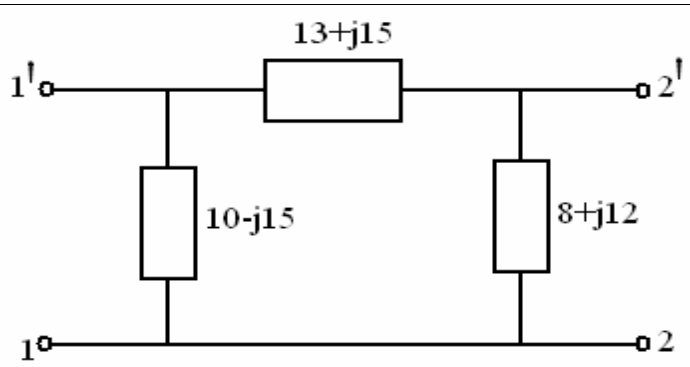
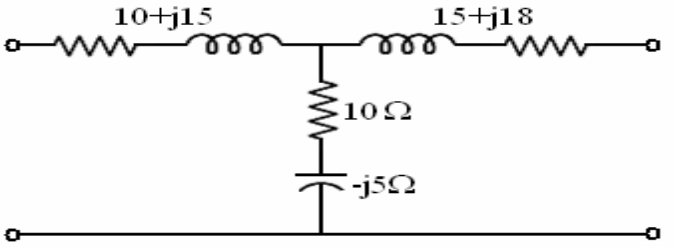
S. No	Question	Blooms Taxonomy Level	Course Outcome
			
5	Apply Routh criteria to the following denominator equation and determine the number of roots with (i) positive real pats (ii) with zero real parts (iii) with negative real parts. Also discuss about the stability of the network. Q(s)=S6-S5-2S4+4S3-5S2+21S+30	Apply	3
6	The Laplace transform of a voltage v(t) is V(s)=50(s+1)/(s+2)(s+3). Draw poles and zeros of this function and determine v(t) using pole-zero plot	Apply	3
7	The transform voltage V(s) of a network is given by V(s) =s/(s+2)(s2+2s+2) plot its pole-zero diagram and hence obtain v(t)	Apply	3
8	For the given network function draw pole zero diagram and hence obtain the time domain response i(t) if I(s) = 10S / (S+1)(s2+4S+8)	Apply	3
9	Find the transfer impedance of he given circuit 	Apply	3
10	Find the transfer admittance of the circuit given below 	Apply	3

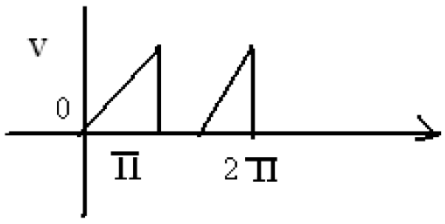
S. No	Question	Blooms Taxonomy Level	Course Outcome
	UNIT-IV **Network parameters** **SHORT ANSWER TYPE QUESTIONS**		
1	Define active and passive ports	Create	3
2	Why Z-parameters are called as open circuit impedance (Z) parameter	Evaluate	3
3	Define open circuit forward transfer impedence	Evaluate	3
4	Give the condition for reciprocity for Z parameters	Analyze	3
5	Why Y parameters are called as short circuit admittance parameters	Evaluate	3
6	What are the applications of cascaded ABCD parameters	Evaluate	3
7	Express y-parameters in terms of h-parameters	Evaluate	3
8	Express Z-parameters in terms of h-parameters	Remember	3
9	Express Z parameters in terms of ABCD parameters	Create	3
10	Express h-parameters in terms of ABCD parameters	Create	3
11	How many terminals a two port does a network have	Evaluate	3
12	Write the condition for a two port network to be reciprocal.	Evaluate	3
13	Which parameters are widely used in transmission line theory	Analyze	3
14	How can we obtain the h parameters of a circuit	Evaluate	3
15	Write the equation for the transfer impedance of a two port network	Evaluate	3
	LONG ANSWER QUESTIONS		
1	Obtain Y-parameters of the two port network given 	Evaluate	3
2	Find the Y parameters of the circuit shown 	Evaluate	3
3	The Z parameters of a two port network are Z11=6Ω, Z22=4Ω, Z12=Z21= 3Ω Compute Y and ABCD Parameters and write the describing equations	Evaluate	3

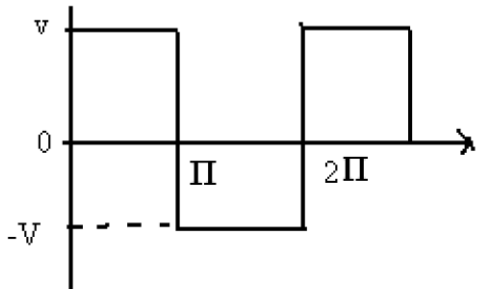
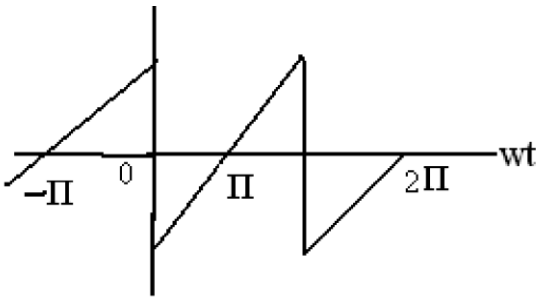
S. No	Question	Blooms Taxonomy Level	Course Outcome
4	Discuss in detail about series and parallel connection of two port networks	Evaluate	3
5	Find the Z parameters of the circuit shown 	Evaluate	3
6	Find the h parameters of the circuit shown 	Evaluate	3
7	Determine the image parameters of a T network with branch impedances 1 ohm, 2 ohm and 5 ohm.	Evaluate	3
8	Explain image parameters with necessary expressions	Evaluate	3
9	The Z parameters of a two port network are Z11 = 10 ohm, Z22 = 15 ohm, Z12= Z21 = 5 ohm. Find the equivalent T network.	Evaluate	3
10	The Z parameters of a two port network are Z11 = 10 ohm, Z22 = 15 ohm, Z12= Z21 = 5 ohm. Find the ABCD parameters.	Evaluate	3
11	Obtain the expressions for Y parameters of when two two port networks are connected in parallel	Evaluate	3
12	Find the ABCD parameters of the circuit shown 	Evaluate	3

S. No	Question	Blooms Taxonomy Level	Course Outcome
	ANALYTICAL QUESTIONS		
1		Apply	3
2	Find Y_{12} for the circuit in Figure 	Apply	3
3	For the following network shown in figure determine Z parameters 	Apply	3
4	Obtain Z-parameters of the two port network 	Understand	3
5	Find the Z parameters of the circuit shown 	Apply	3

S. No	Question	Blooms Taxonomy Level	Course Outcome
6	Determine the ABCD parameters of two networks connected in cascade as shown in Figure 	Understand	3
7	Find the h-parameters for the circuit in Figure 	Understand	3
8	Find the Y-parameters of the network shown 	Understand	3
9	Determine the ABCD parameters of two networks connected in cascade as shown 	Evaluate	3
10	For the two port network given below (Shown in Figure.3) determine ABCD & hybrid parameters	Understand	3

S. No	Question	Blooms Taxonomy Level	Course Outcome
			
11	For the two port network given below (shown in Figure.4) determine Y and ABCD parameters 	Analyze	3
	UNIT-V **Filters and Fourier analysis of AC circuits** **SHORT ANSWER TYPE 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	4
2	Obtain design equations of high pass filter?	Understand	4
3	Draw a circuit of a band stop filter and explain its working with neat reactance curves?	Understand	4
4	For band stop filter show that resonant frequency is the geometric mean of two cut-off frequencies?	Remember	4
5	What are disadvantages of proto type filters?	Remember	4
6	Explain in brief m-derived filter section overcome limitations of proto type filter section?	Remember	4
7	Write notes on termination with m-derived half section?	Understand	4
8	Categorize filters and explain	Remember	4
9	Describe a proto type t section band stop filter. Determine the formula for designing band pass filter?	Understand	4
10	Draw the wave form and obtain the Fourier series of a single rectangular pulse when the pulse has period of 2 seconds and start from origin.	Remember	4
	LONG ANSWER QUESTIONS		
1	Define a filter and What are the classification of filters	Understand	4
2	Explain the formula for characteristic impedance of symmetrical T-Section	Create	4
3	Explain the design procedure for a constant K low pass filter and its characteristics	Understand	4

S. No	Question	Blooms Taxonomy Level	Course Outcome
4	Write short note on m-derived filters	Create	4
5	Design a proto type section of band pass filter having cut-off frequencies of 12KHz and,16 KHz and a design impedance of 600 ohm	Understand	4
6	Write short notes on Fourier transform theorems.	Create	5
7	Write short notes on Exponential form of Fourier series	Understand	5
8	Write short notes on Line and phase angle spectra	Apply	5
9	Write short notes on Fourier integrals	Understand	5
10	Design a proto type section of band pass filter having cut-off frequencies of 1 KHz and, 5 KHz and a design impedance of 600ohm	Evaluate	4
11	A constant K low pass filter is designed to cut-off at a frequency of 1000Hz and the resistance of the load circuit is 50ohm .Calculate the values of the corresponding components required	Synthesize	4
	ANALYTICAL QUESTIONS		
1	Design a low pass filter (both T and π sections) having a cutoff frequency of 2 KHz to operate with a terminated load resistance of 500Ω	Apply	4
2	Draw the circuit diagram of a Band pass filter. Explain the design procedure of the above filter in detail	Evaluate	4
3	Design a constant K band elimination filter with cut off frequency 1750 Hz to 4250 Hz and a characteristic impedance of 250Ω	Evaluate	4
4	Draw the circuit diagram of a Band pass filter. Explain the design procedure of the above filter in detail	Apply	
5	Draw the circuit diagram of a High pass filter. Explain the design procedure of the above filter in detail	Apply	
6	Draw the circuit diagram of a Low pass filter. Explain the design procedure of the above filter in detail	Apply	4
7	Design a proto type section of band pass filter having cut-off frequencies of 12KHz and,16 KHz and a design impedance of 600 ohm	Apply	4
8	Design a low pass filter (both T and π sections) having a cutoff frequency of 2 KHz to operate with a terminated load resistance of 500Ω	Apply	4
9	Find the component values of a constant K LPF having characteristic impedance Z_0 = 500Ω and cut off frequency of f_c = 500 Hz. Find the frequency at which this filter produces an alternation constant of 38.2 dB	Apply	4
10	Derive the expression for cut-off frequency of the constant k low pass and high pass filter.	Apply	4
11	Find the trigonometric Fourier series for the wave shown in fig. and plot the spectrum 	Apply	5

S. No	Question	Blooms Taxonomy Level	Course Outcome
12	Find the exponential Fourier series for the waveform shown in figure 	Apply	5
13	Find the exponential Fourier series for the waveform shown in fig and plot the spectrum 	Apply	5
14	Design a constant K band elimination filter with cut off frequency 1750 Hz to 4250 Hz and a characteristic impedance of 250Ω.	Apply	5
15	Find the component values of Π-section & T-section constant-K high pass filter having a cut off frequency of 8 kHz and nominal characteristic impedance of 500Ω. Find its characteristic impedance and phase constant at f = 12 kHz and attenuation at f = 1 kHz Design a low pass T and π section filters having a design impedance R0=600_ and cut-off frequency =2000Hz	Apply	5

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HOD, EEE