Program: Electronics and Telecommunication Engineering

Curriculum Scheme: Revised 2012

Examination: Second Year Semester III

Course Code: ETC304 Course Name: Circuits and Transmission Lines

Time: 1 hour Max. Marks: 50

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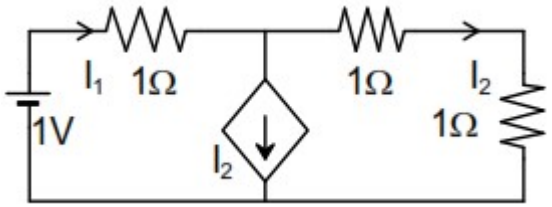
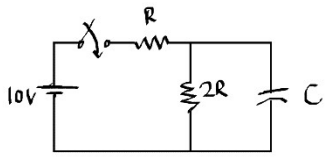
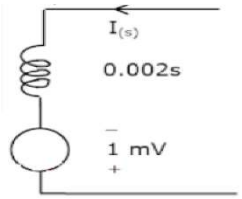
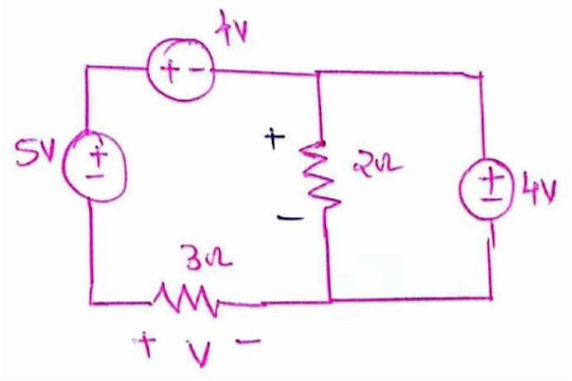
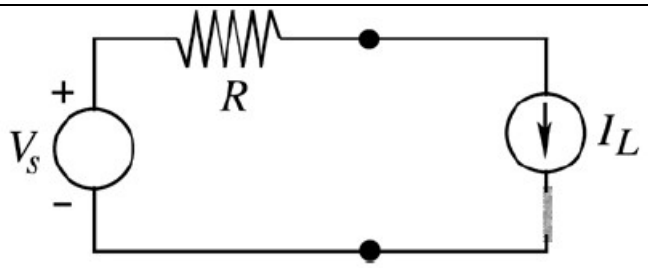
Note: All the questions are compulsory and carry equal marks.

Q.1	When a transmission line has a load impedance same as that of the characteristic impedance, the line is said to be
Option A:	Parallel
Option B:	Perpendicular
Option C:	Polarized
Option D:	Matched
Q.2	In the following network what is the current supplied by 1 Volt voltage source? 
Option A:	0.5 A
Option B:	1 A
Option C:	1.5 A
Option D:	1.2 A
Q.3	When two coils having self inductances of L1 and L2 are coupled through a mutual inductance M,the coefficient of coupling K is given by
Option A:	$M/\sqrt{(2L1\ L2)}$
Option B:	$M/\sqrt{(L1\ L2)}$
Option C:	$2M/\sqrt{(L1\ L2)}$
Option D:	(L1 L2)/M
Q.4	Consider the statements: The coefficient of coupling between two coils depends upon 1) Orientation of the coils 2) Core Material 3)Number of turns on the two coils 4) Self-inductance of the two coils
Option A:	1,2 and 3 are correct
Option B:	1 and 2 are correct

Option C:	3 and 4 are correct
Option D:	1,2 and 4 are correct
Q.5	The differential equation for the current i(t) in the given circuit 
Option A:	2 RC
Option B:	3 RC
Option C:	0.5 RC
Option D:	0.67 RC
Q.6	A 2mH inductor with some initial current is shown in figure below. 'S' is the Laplace tranform variable. The value of initial current is: 
Option A:	1A
Option B:	0.25 A
Option C:	0.5 A
Option D:	2.5 mA
Q.7	Find voltage V. 
Option A:	3 Volt
Option B:	4 Volt
Option C:	1 Volt
Option D:	13 Volt

Q.8	The circuit shown in the figure consists of resistance, capacitance and inductance in series with a 100V source when the switch is closed at t = 0. Find the equation obtained from the circuit in terms of current. 
Option A:	$100 = 20i + 0.05\frac{di}{dt} + \frac{1}{20\times10^{-6}}$
Option B:	$100 = 20i - 0.05\frac{di}{dt} + \frac{1}{20\times10^{-6}}$
Option C:	$100 = 20i + 0.05\frac{di}{dt} - \frac{1}{20\times10^{-6}}\int$
Option D:	$100 = 20i - 0.05\frac{di}{dt} - \frac{1}{20\times10^{-6}}\int i$
Q.9	For a two-port network to be reciprocal
Option A:	$Z_{11}=Z_{22}$
Option B:	$Y_{21}=Y_{12}$
Option C:	$h_{21}= - h_{12}$
Option D:	AD-BC=0
Q.10	Two two-port networks are connected in cascade. The combination is to be represented as a single two port network. The parameters are obtained by multiplying the individual
Option A:	z-parameter matrix
Option B:	h-parameter matrix
Option C:	y-parameter matrix
Option D:	ABCD parameter matrix
Q.11	In the circuit shown below, V_s is a constant voltage source and I_L is a constant current load. The value of I_L that maximizes the power absorbed by the constant current load is

	
Option A:	$\frac{Vs}{4R}$
Option B:	$\frac{Vs}{2R}$
Option C:	$\frac{Vs}{R}$
Option D:	∞
Q.12	How is the short circuit reverse transfer admittance (Y_{12}) calculated in terms of current and voltage ratio?
Option A:	V_2/ I_1 (keeping $I_2 = 0$)
Option B:	I_2/ V_1 (keeping $V_2 = 0$)
Option C:	I_1/ V_2 (keeping $V_1 = 0$)
Option D:	V_1/ I_2 (keeping $I_1 = 0$)
Q.13	Which among the below mentioned cases are responsible for generating the oscillations with increasing amplitude in time domain response of system function?
Option A:	Complex poles with positive real part
Option B:	Complex poles with negative real part
Option C:	Repeated poles on imaginary axis
Option D:	Repeated poles on real axis
Q.14	Which theorem assists in replacement of an impedance branch over the network by the other network comprising different circuit components, without affecting the V-I relations throughout the entire network?
Option A:	Superposition Theorem
Option B:	Compensation Theorem
Option C:	SubstitutionTheorem
Option D:	Maximum Power Transfer Theorem
Q.15	Which is the correct sequential order of steps to be undertaken while applying Thevenin's theorem?
Option A:	Estimation of branch current by schematic representation of Thevenin's equivalent circuit.

Option B:	Estimation of equivalent impedance between two terminals of the branch
Option C:	Removal of branch impedance through which required
Option D:	Calculation of Thevenin's equivalent voltage
Q.16	**Transfer admittance function is the ratio of Laplace transforms of _____.**
Option A:	Current at one port to voltage at other port
Option B:	Voltage at one port to current at other port
Option C:	Current at one port to current at other port
Option D:	Voltage at one point to voltage at other port
Q.17	The propagation constant of a transmission line with impedance and admittance of 9 and 16 respectively is
Option A:	25
Option B:	144
Option C:	12
Option D:	7
Q.18	Superposition Theorem can be applied only to circuits having
Option A:	Resistive elements
Option B:	Passive elements
Option C:	Non-linear elements
Option D:	Linear bilateral elements
Q.19	Kirchhoff's current law is applicable to only
Option A:	Junction in a network
Option B:	Closed loops in a network
Option C:	Electric circuits
Option D:	Electronics circuits
Q.20	If z-parameters are $z_{11} = 40$, $z_{22} = 50$ and $z_{12} = z_{21} = 20$, what would be the value of y_{22} in the matrix form of y-parameters given below?
Option A:	5/160
Option B:	2/160
Option C:	-2/160
Option D:	4/160
Q.21	Which among the below mentioned cases are responsible for generating the oscillations with increasing amplitude in time domain response of system function? 1.Complex poles with positive real part 2. Complex poles with negative real part 3. Repeated poles on imaginary axis

	4. Repeated poles on real axis
Option A:	2 & 3
Option B:	2 & 4
Option C:	1 & 4
Option D:	1 & 3
Q.22	Efficiency of power transfer when maximum transfer of power occurs is
Option A:	100%
Option B:	80%
Option C:	75%
Option D:	50%
Q.23	Milliman's theorem yields
Option A:	Equivalent resistance
Option B:	Equivalent impedance
Option C:	Equivalent voltage source
Option D:	Equivalent Voltage or current source
Q.24	On which factor does the steady state error of the system depend?
Option A:	Order
Option B:	Type
Option C:	Size
Option D:	Prototype
Q.25	The s-domain equivalent of the capacitor reduces to the capacitor with impedance?
Option A:	sC
Option B:	C
Option C:	1/C
Option D:	1/sC