Reg.No.:												

VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN
[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]
Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

Question Paper Code: 70060

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – JAN. / FEB. 2026
Second Semester
Electronics and Communication Engineering
U19EC201 - ELECTRIC CIRCUIT THEORY
(Common to BME)
(Regulation 2019)

Time: Three Hours | Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

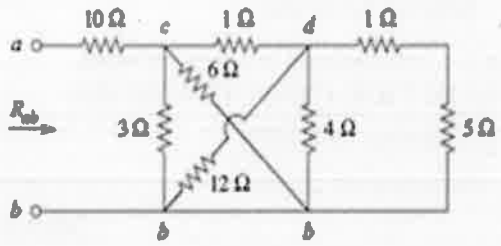
(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	State ohms law and its limitations.	2	K1	CO1
2.	Define Mesh analysis method.	2	K1	CO1
3.	State maximum power transfer theorem.	2	K1	CO2
4.	How to convert the current source into voltage source?	2	K2	CO2
5.	A circuit has a resonant frequency of 80 Hz and lower half-power frequency of 40 Hz. Find its bandwidth.	2	K2	CO3
6.	What is meant by single tuned coupled circuits and sketch the frequency response of single tuned coupled circuits.	2	K1	CO3
7.	A series RL circuit has R = 100 Ω and L = 1 H is excited by 10 volts DC supply. Find i(0) for the circuit.	2	K2	CO4
8.	Differentiate natural response with forced response.	2	K2	CO4
9.	What is meant by driving point impedance?	2	K1	CO5
10.	The z-parameters of a two port network is $Z_{11} = 40\ \Omega$, $Z_{22} = 50\ \Omega$ and $Z_{12} = Z_{21} = 20\ \Omega$. Find the equivalent T network.	2	K2	CO5

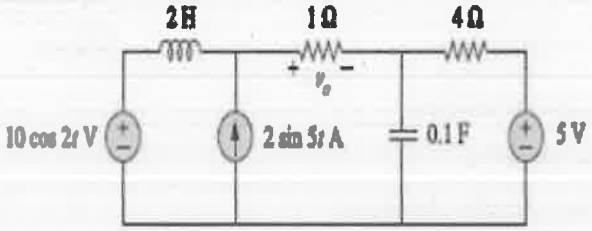
PART – B

(5 x 13 = 65 Marks)

Q.No.		Questions	Marks	KL	CO
11.	a)	State and explain KCL and KVL with examples.	13	K2	CO1
		(OR)			
	b)	Calculate the equivalent resistance R_{ab} in the circuit shown below	13	K2	CO1

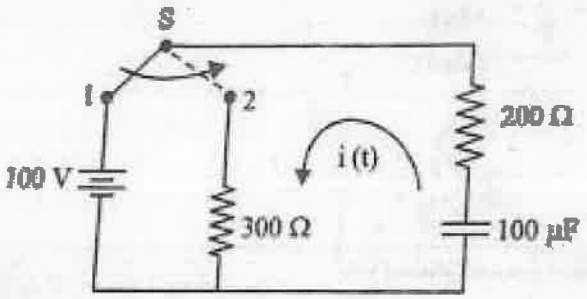


12.	a)	State and explain Thevenin's theorem with an example.	13	K2	CO2
		(OR)			
	b)	Using superposition theorem, find the voltage v_o for the circuit shown below.	13	K2	CO2



13.	a)	Derive the following expressions for a series RLC i. Resonant frequency of the circuit ii. Q-Factor of the circuit at the resonant frequency iii. Bandwidth of the resonant circuit	13	K2	CO3
		(OR)			
	b)	Derive the following expressions for a single tuned circuit (i) resonant frequency (ii) the output voltage at resonance.	13	K2	CO3
14.	a)	Derive the transient response of RL Circuit with excitation by step signal.	13	K2	CO4
		(OR)			

	b)	In the circuit shown below, switch s is in position 1 till steady state conditions are reached and the moved to 2. Find the energy dissipated in the two resistors. Show that this is equal to the energy stored in the capacitor before moving the switch.	13	K2	CO4



15.	a)	With the necessary expressions, explain the Z and Y parameters for a two port network.	13	K2	CO5
		(OR)			
	b)	Explain the transmission parameters for the two-port network.	13	K2	CO5

PART – C

(1 x 15 = 15 Marks)

Q.No.		Questions	Marks	KL	CO
16.	a)	With an illustration, explain the concept of star to delta transformation and delta to star transformation.	15	K2	CO1
		(OR)			
	b)	Determine the current Io in the circuit shown below using Norton's theorem.	15	K2	CO2