Hall Ticket Number:

Code No. : 13414

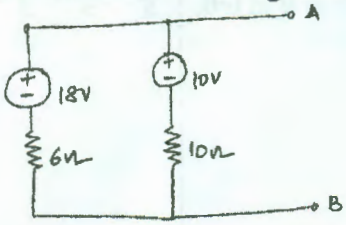
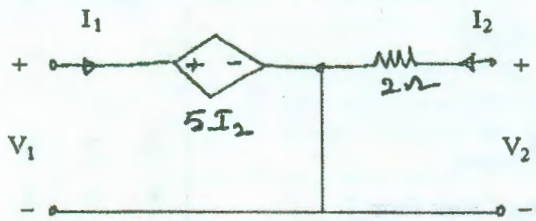
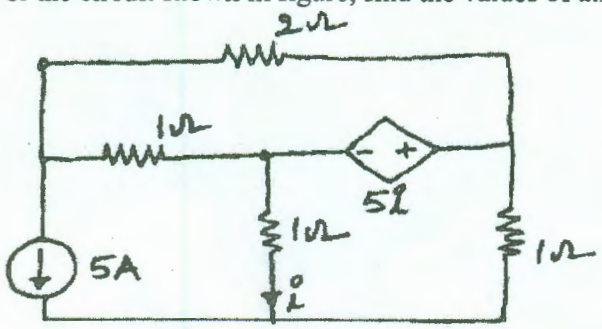
VASAVI COLLEGE OF ENGINEERING *(Autonomous)*, HYDERABAD

B.E. (ECE: CBCS) III-Semester Main Examinations, December-2018

Networks Analysis

Time: **3** hours Max. Marks: **60**

*Note: Answer **ALL** questions in **Part-A** and any **FIVE** from **Part-B***

Q. No	Stem of the Question	M	L	CO	PO
	Part-A (10 × 2 = 20 Marks)				
1.	Define Twig, Co-tree.	2	2	1	2
2.	Transform the following circuit into a single current source. 	2	2	1	3
3.	State Thevenin's and Norton's theorems and also write their limitations	2	2	2	2
4.	State Maximum Power transfer theorem.	2	2	2	2
5.	Write the procedure to evaluate the initial conditions of during the transient analysis of circuits.	2	2	3	2
6.	Differentiate between Zero Input Response (ZIR) and Complete Response.	2	2	3	2
7.	Draw the equivalent circuit of a two-port network in terms Y-parameters and g-parameters.	2	2	4	2
8.	Find Admittance parameters of the circuits given below: 	2	2	4	3
9.	List the properties of Positive Real Functions.	2	2	5	2
10.	Check whether the given polynomial P(S)= $S^5 + 7S^4 + 6S^3 + 9S^2 + 8S$ is Hurwitz or not	2	2	5	3
	Part-B (5 × 8 = 40 Marks)				
11. a)	For the circuit shown in figure, find the values of all mesh currents using mesh analysis. 	5	3	1	3
	b) Compare and contrast Tie-Set and Cut-Set in all respects.	3	2	1	2

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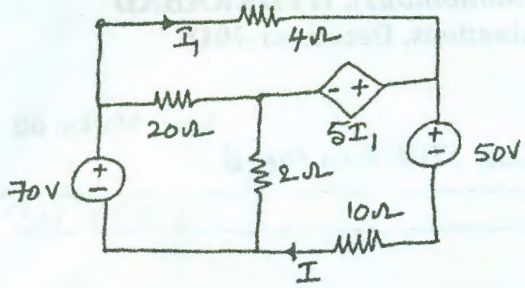
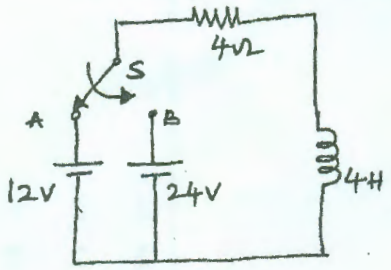
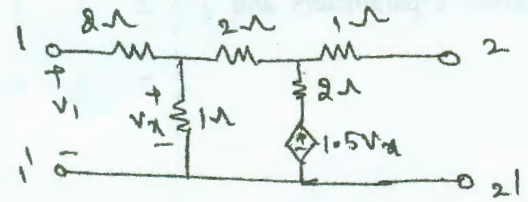
a)	Applying Super-position theorem, compute current I in the circuit shown in figure below:	5	3	2	4



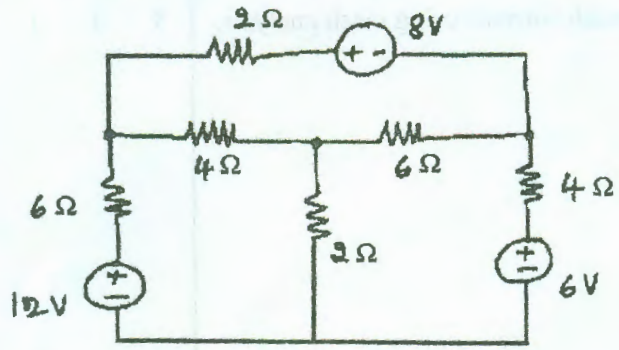
b)	Derive the condition of reciprocity for hybrid-Parameters.	3	2	2	3
13. a)	The circuit shown in figure the switch 'S' is moved from position A to position B at t=0. Determine current through inductor i_L (t) for all t.	5	3	3	3



b)	Describe the nature of roots for an RLC circuit along with neat sketches.	3	2	3	2
14. a)	Analyze the given two-port network and evaluate the Z-parameters for the network shown below:	5	4	4	4



b)	Formulate Transmission parameters in terms of Z-parameters.	3	2	4	3
15. a)	Synthesize the impedance function $Z(S)=\frac{2S^5+12S^3+16S}{S^4+4S^2+3}$ using Cauer form-I.	4	5	5	4
b)	Synthesize the impedance function $Z(S)=\frac{S+2}{(S+1)(S+3)}$ in Foster form-II.	4	5	5	4
16. a)	For the circuit shown below: i) Draw the directed network graph ii) obtain the equilibrium equations using KVL iii) Calculate loop currents using Tie-set analysis.	4	3	1	3



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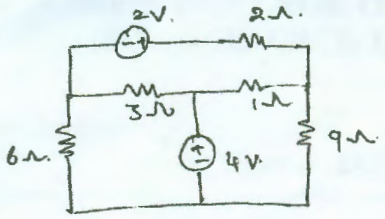
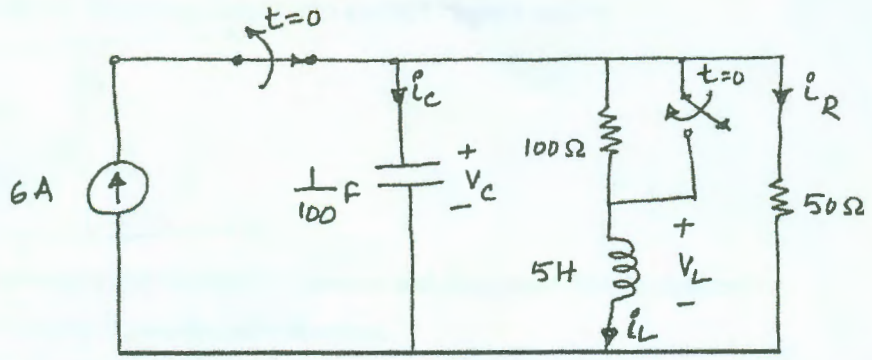
b) By analyzing the circuit given, verify Tellegen's theorem. 	4	2	2	3
17. Answer any *two* of the following:				
a) Analyze the circuit given and evaluate the following: i) $i_C(0+)$ ii) $i_L(0+)$ iii) $v_C(0+)$ iv) $i_R(0+)$ 	4	4	3	3
b) If the networks are interconnected in series-parallel manner, 'the overall h-parameters are the summation of individual h-parameters of the networks interconnected- Justify.	4	2	4	3
c) In a series RLC circuit, if the applied voltage is 10V, What is the voltage across the inductor if the resonance frequency is 1khz and Q=10.	4	2	5	3

M: Marks; L: Bloom's Taxonomy Level; CO: Course Outcome; PO: Programme Outcome

S. No.	Criteria for questions	Percentage
1	Fundamental knowledge (Level-1 & 2)	53.75
2	Knowledge on application and analysis (Level-3 & 4)	36.25
3	*Critical thinking and ability to design (Level-5 & 6) (*wherever applicable)	10