Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC - SEMESTER–II • EXAMINATION – WINTER • 2014

Subject Code: X20901 Date: 26-12-2014

Subject Name: Circuits and Networks

Time: 02:30 pm - 05:00 pm Total Marks: 70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	State and explain maximum power transfer theorm.	**07**
	(b)	Discuss duality between Thevinin's and Norton's theorm.	**07**
Q.2	**(a)**	Determine current 'I' using source transformation techniques in fig. 1.	**07**
	(b)	Determine Impedance parameter set for the network shown in fig. 2.	**07**
		OR	
	(b)	Determine transmission line parameter set for the network shown in fig. 2.	**07**
Q.3	**(a)**	Determine current through 2 ohm resister in fig. 3 using mesh analysis.	**07**
	(b)	Explain significance of dot in magnetically coupled circuits.	**07**
		OR	
Q.3	**(a)**	Determine current through 2 ohm resister in fig. 3 using Node voltage analysis.	**07**
	(b)	Discuss application of Laplace transformation in circuit analysis. Give suitable example.	**07**
Q.4	**(a)**	Explain dependant current and voltage sources with suitable example.	**07**
	(b)	In the circuit shown in fig. 4 switch k is opened at t=0. Determine v, dv/dt and d^2v/dt^2 at $t=0_+$.	**07**
		OR	
Q.4	**(a)**	Discuss concept of complex frequency.	**07**
	(b)	Prepare graph tree and co tree for the network shown in fig. 5	**07**
Q.5	**(a)**	Explain cascade connection of two port network.	**07**
	(b)	Explain various source transformation techniques.	**07**
		OR	
Q.5	**(a)**	Explain how any two port network can be represented by simplified 'T' or 'π' network using two port parameter sets.	**07**
	(b)	Use superposition theorm to find current through 10 V source in fig -3.	**07**

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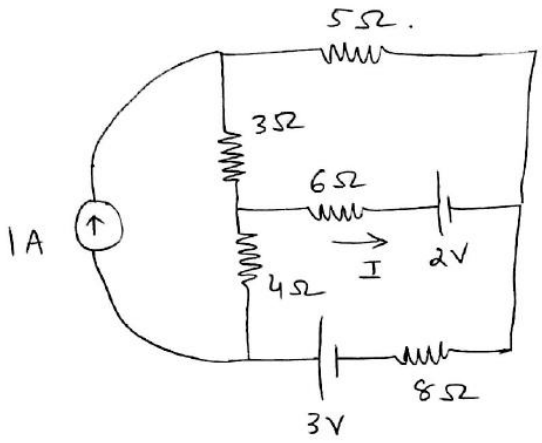
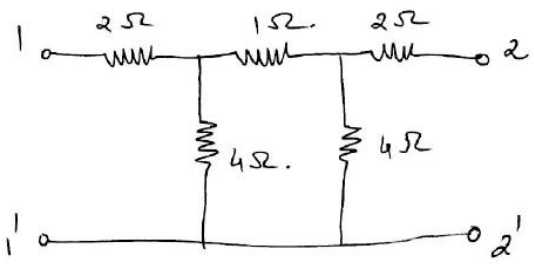
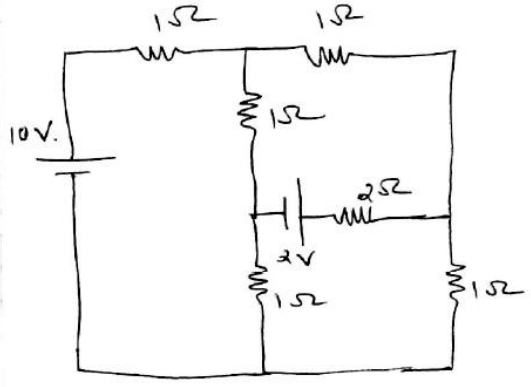


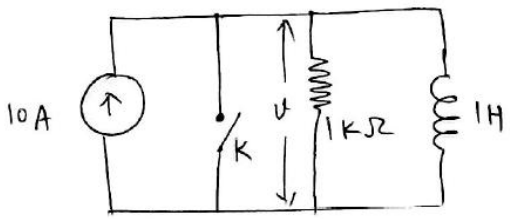
(Fig-1).



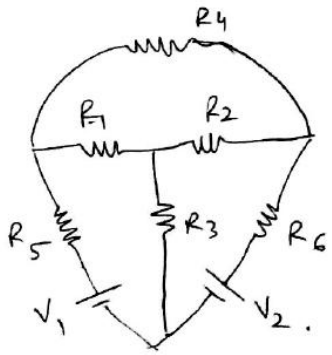
(Fig-2).



(Fig--3).



(Fig-4).



(Fig-5).