

310706	Roll No. _____	Total No. of Pages: 3
	310706 B. Tech. III - Sem. (Main) Exam., February - 2021 Electronics & Communication Engineering 3EC4-06 Network Theory Common for ECE/EIC	

Time: 3 Hours

Maximum Marks: 160

Instructions to Candidates:

Part – A: Short answer questions (up to 25 words) 10×3 marks = 30 marks.
All ten questions are compulsory.

Part – B: Analytical/Problem Solving questions (up to 100 words) 5×10 marks = 50 marks. Candidates have to answer five questions out of seven.

Part – C: Descriptive/Analytical/Problem Solving questions 4×20 marks = 80 marks. Candidates have to answer four questions out of five.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Use of following supporting materials is permitted during examination. (Mentioned in form No. 205)

1. NIL

2. NIL

PART - A

- Q.1 State Kirchoff's current law. [3]
- Q.2 State and prove Maximum Power Transfer Theorem. [3]
- Q.3 Write properties of Laplace transformations. [3]
- Q.4 Define transient state and transient time. [3]
- Q.5 Draw the phasor diagram of power factor measurement in three phase circuits. [3]
- Q.6 What is the matrix formation equation for Mesh and Nodal method? [3]
- Q.7 Define active and reactive power in AC circuits. [3]
- Q.8 What are the steps followed in Compensation Theorem? [3]
- Q.9 Write the steps to be involved in the determination of initial conditions. [3]
- Q.10 Define quality factor of series resonance circuit. [3]

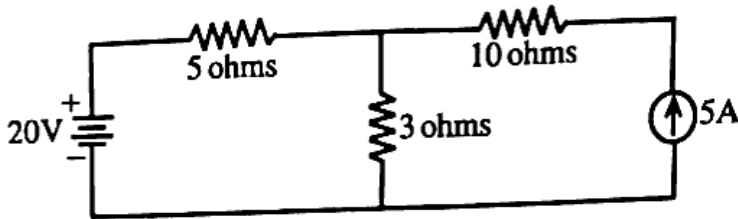
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Page 1 of 3

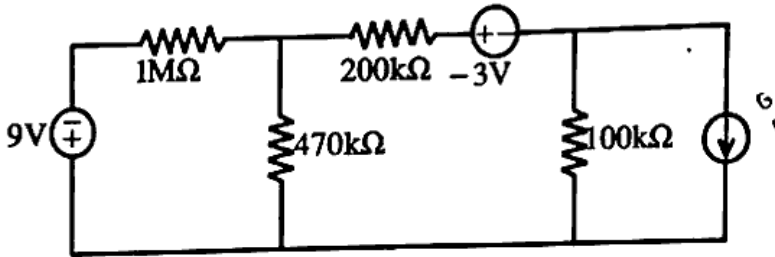
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PART - B

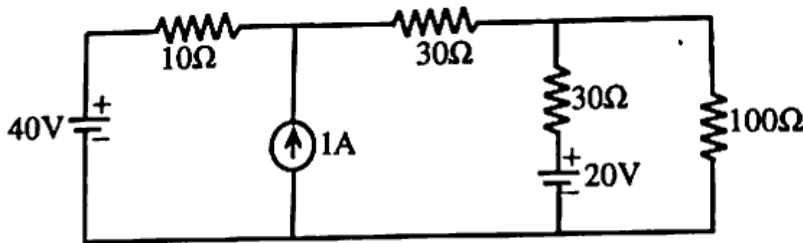
- Q.1 Explain the series and parallel connection of two port networks. [10]
- Q.2 Derive transient current and voltage responses of sinusoidal driven RL and RC circuits. [10]
- Q.3 Find the current through 3 ohms resistor by using Superposition theorem - [10]



- Q.4 Explain source transformations and use it to determine the power dissipated by $1M\Omega$ resistance - [10]

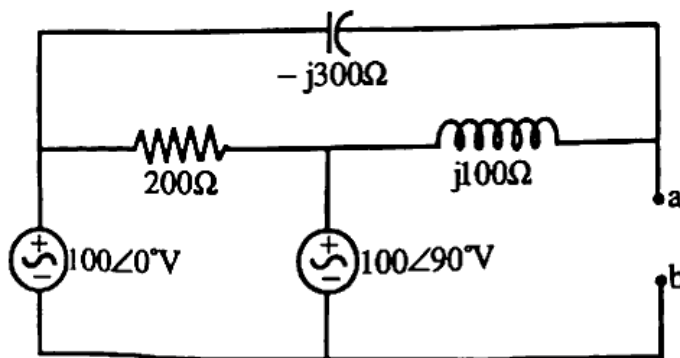


- Q.5 Find the current in 100Ω resistor using nodal analysis - [10]



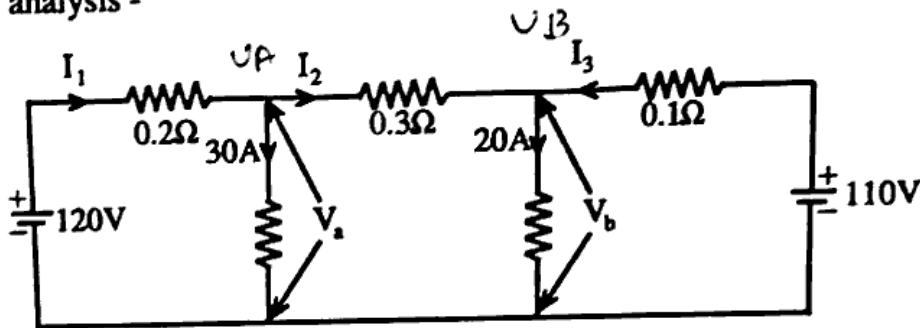
- Q.6 State and prove time differentiation theorem in Laplace Transform. [10]

- Q.7 Calculate Thevenin equivalent circuit with respect to terminal a and b -



PART - C

- Q.1 What are the restrictions on pole and zero locations for transfer functions and driving point functions? [20]
- Q.2 Explain low pass filters. Discuss the design considerations of K type-low pass filters. [20]
- Q.3 Draw the DC response of R-L-C circuit and derive the equation of over damped, under damped and critically damped. [20]
- Q.4 Find the currents I_1 , I_2 , I_3 and the voltages V_a and V_b in the network of figure by using nodal analysis - [20]



- Q.5 Explain three phase power measurement by 2 Wattmeter method for star and delta connected load and determine the power equation and draw the phasor diagram. [20]

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