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PES UNIVERSITY

PES University, Bangalore
(Established under Karnataka Act No. 16 of 2013)

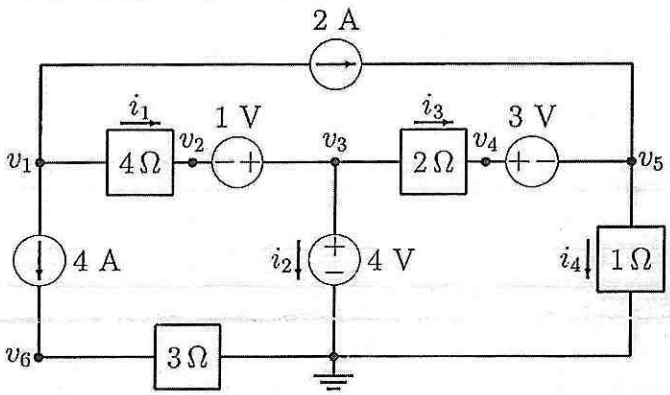
UE17EC201

DEC 2018: END-SEMESTER ASSESSMENT — B.TECH. IIIrd SEM.

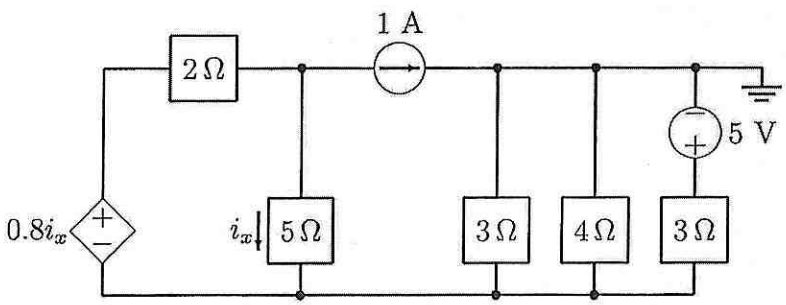
UE17EC201 — NETWORK ANALYSIS & SYNTHESIS

Time: 3 Hrs | Answer All Questions | Max. Marks: 100

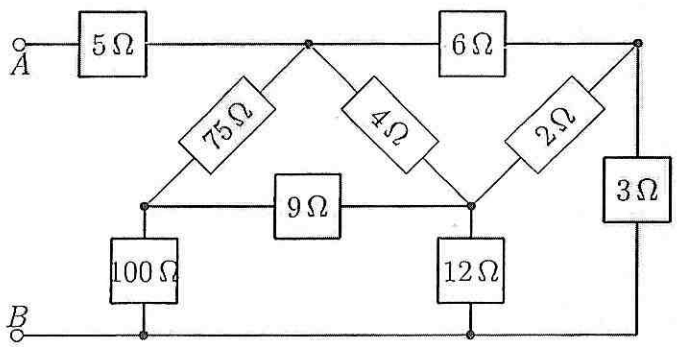
1. (a) Find each of the voltages v_1 through v_6, the currents i_1 through i_4, and the power supplied by the 2 A source in the circuit shown below. **(7 Marks)**



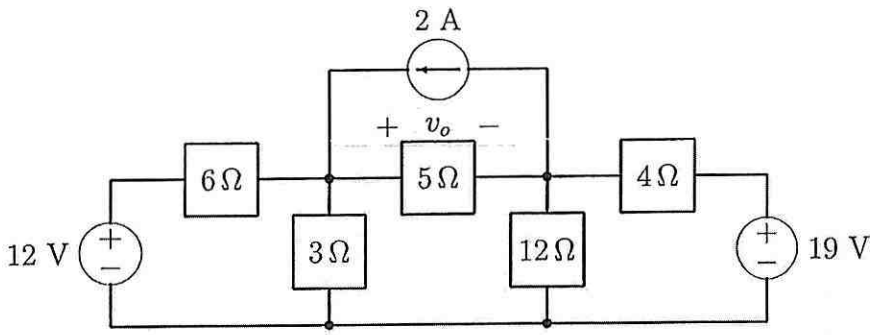
(b) Use mesh analysis to determine the current through each branch of the following circuit. **(6 Marks)**



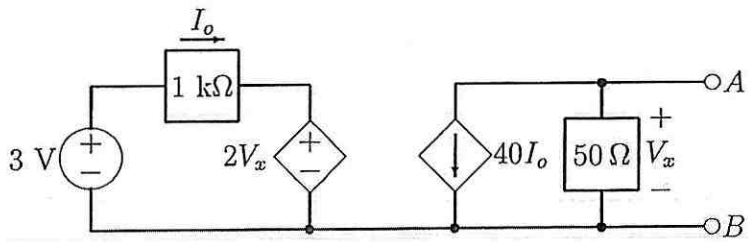
(c) Find the resistance between the terminals A and B. **(7 Marks)**



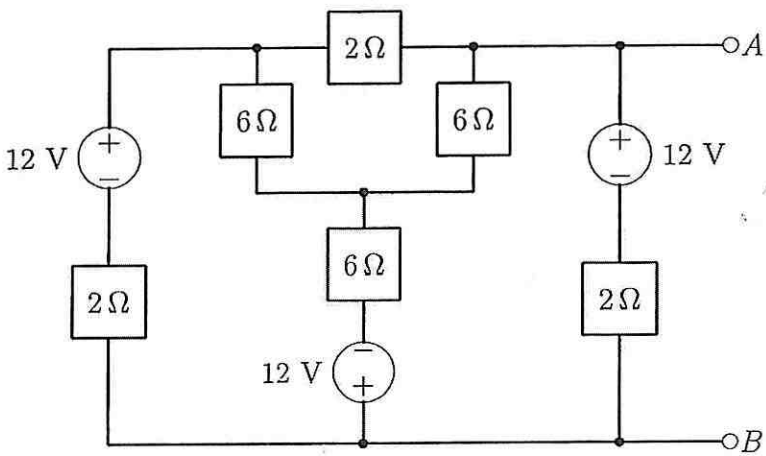
2. (a) Find the voltage v_o using the principle of superposition. **(8 Marks)**



(b) Find the Thévenin equivalent between the terminals A and B of the circuit shown below: **(4 Marks)**



(c) Find the Norton equivalent between the terminals A and B of the circuit shown below: **(8 Marks)**



3. (a) A switch is closed at time $t = 0$ connecting a battery of voltage V with a series RC circuit.

i. Determine the ratio of energy delivered to the capacitor to the total energy supplied by the source as a function of time.

ii. What is the limit of this ratio as $t \longrightarrow \infty$.

(8 Marks)