

No. of Printed Pages : 06

Roll No.

18C11

B. Tech. EXAMINATION, 2020

(Third Semester)

(C Scheme) (Main & Re-appear)

(EE)

EE201C

ELECTRICAL CIRCUIT ANALYSIS

Time : 2½ Hours]

[Maximum Marks : 75

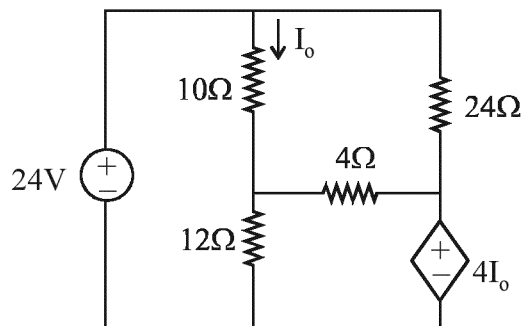
Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Four* questions in all. All questions carry equal marks.

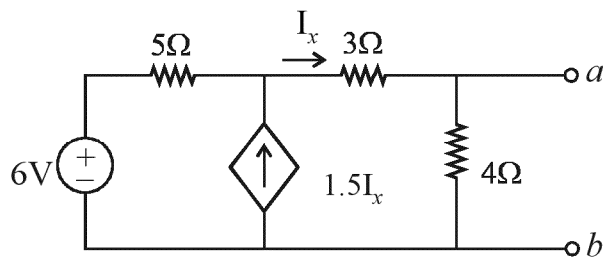
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1. (a) State and explain maximum power transfer theorem for a.c. circuits. Derive the condition for maximum power transfer.
- (b) Use mesh analysis to find the current I_o in the circuit.

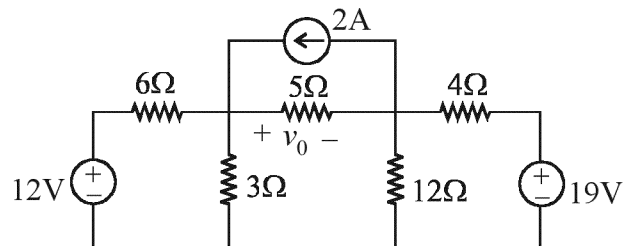


2. (a) Find the Thevenin equivalent of the circuit at terminals $a-b$.

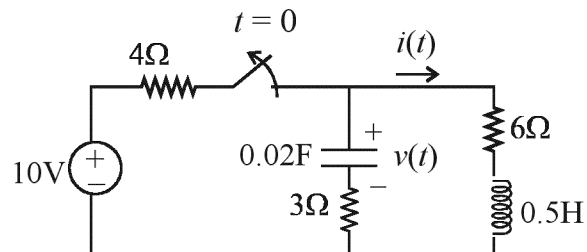


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- (b) Determine v_0 in the circuit using superposition principle.



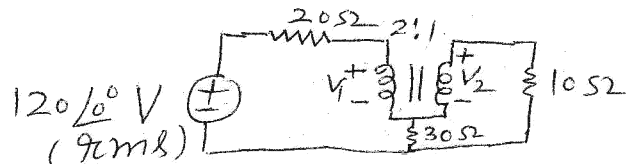
3. (a) What is dot convention ? How does it help in solving magnetically coupled circuits ?
- (b) Find $i(t)$ in the circuit. Assume that the circuit has reached steady state at $t = 0$.



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4. (a) What are the advantages of three-phase systems over single phase systems ? What is phase sequence and its significance in three-phase systems ?
- (b) Calculate the power supplied to the $10\ \Omega$ resistor in the ideal transformer circuit.

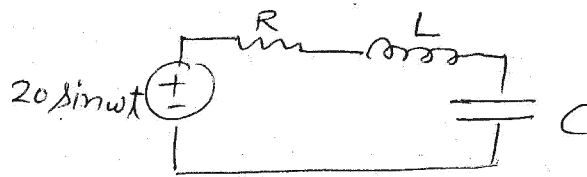


5. (a) What is convolution integral ? Where are its applications ? State and prove convolution theorem.
- (b) Find the inverse Laplace transform of

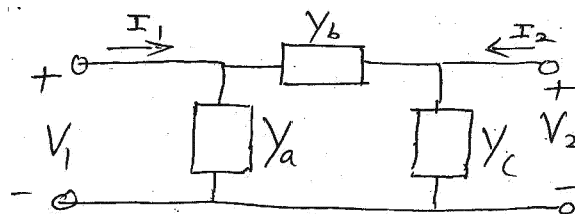
$$F(s) = \frac{(7s + 2)}{s^3 + 3s^2 + 2s}.$$

6. Explain the phenomenon of resonance in series R-L-C circuit.

In the circuit, $R = 2 \Omega$, $L = 1 \text{ mH}$ and $C = 0.4 \mu\text{F}$. Find the resonant frequency and half power frequencies; quality factor and bandwidth; and amplitude of the current at ω_0 , ω_1 and ω_2 .



7. (a) Explain the transmission and inverse transmission parameters of a two port network.
(b) Find the y -parameters of the pi network.



8. (a) Derive the relationship between ABCD and Z-parameters for a two port network.
- (b) Find the hybrid parameters for the given two port network.

