(17)

Menoufia University — Electrical Engineering
Faculty of Electronic Engineering — Final Exam. 10/1/2019
Departement of Industrial Electronics & Control Engineering — T. A. 3\12 Houres
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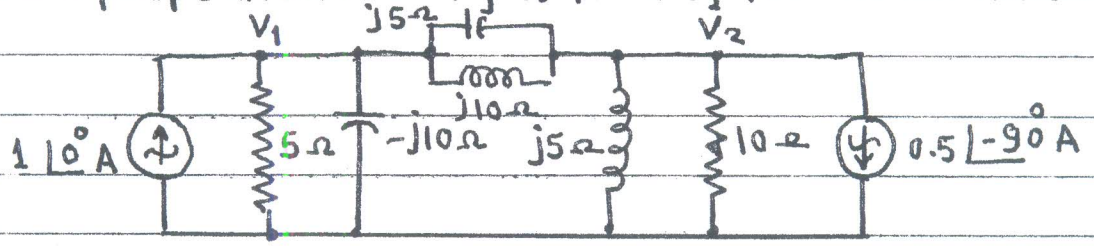
PART II Alternating Current

Answer The following Questions:-

1. a. State the Superpostion Theory

1. b. Use Superposition Theory to find V_1 for the Circuit Shown

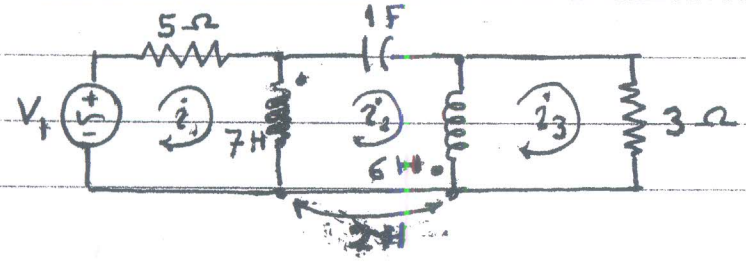


2. a. Derive The instantaneous power entering a circuit $p(t)$

2. b. The voltage across a load is $v(t) = 60\cos(\omega t - 10^\circ)$ V and the current through the element in the direction of the voltage drop is $i(t) = 1.5\cos(\omega t + 50^\circ)$ A Find:
(a) the complex and apparant powers.
(b) the real and reactive powers, and (c) the power factor and the load impedance.

3. a. Derive the relation between the input impedance Z_{in} and load impedance Z_L and turns ratio a in ideal traosformer $Z_{in} = \frac{Z_L}{a^2}$ for finite Z_L.

3. b. Write a complete set of phasor mesh equations for the Circuit shown



with Best Wishes!!