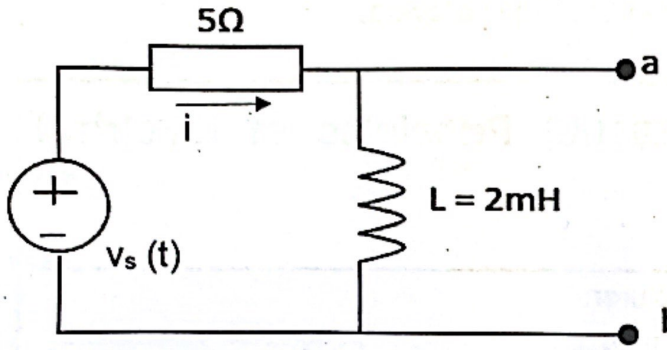
Student Name:.....
Student ID:.....

QUESTIONS

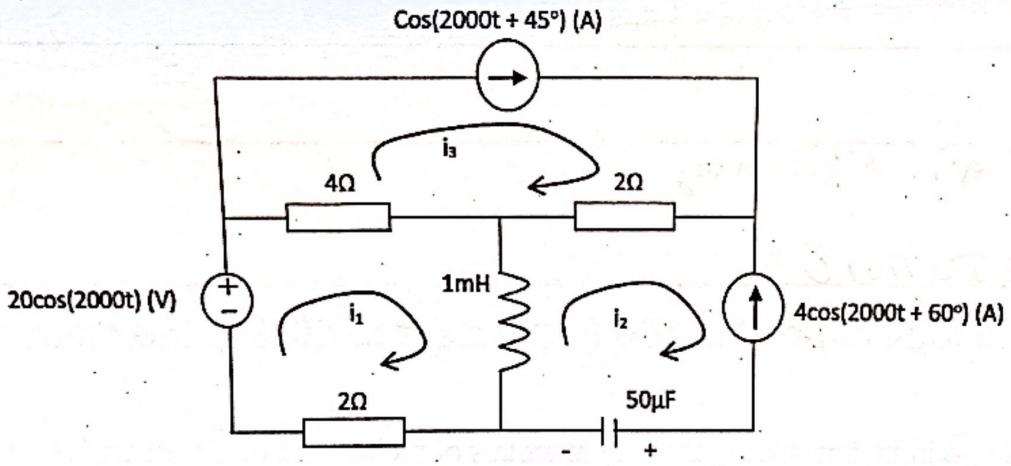
Question 1 (20 Marks)



The electric circuit is depicted in the figure with $v_s(t) = 20\cos(5000t)$ V

a. Show all the values of circuit elements in phasors. (5 Marks)
b. Calculate i(t). (5 marks)
c. Compute and draw the Thevenin equivalent circuit in phasor for terminals a and b. (5 Marks)
d. If a capacitor of 100μF is connected to terminal a and b, determine the voltage across the capacitor in time domain. (5 Marks)

Question 2 (20 Marks)



The electric circuit is shown in the figure

a. Show the circuit in phasors. (5 Marks)
b. Establish the mesh-current equations in phasor. (5 Marks)
c. Determine I_1 in phasor and $i_1(t)$. (5 Marks)
d. Determine voltage across the capacitor in frequency and time domains. (5 Marks)

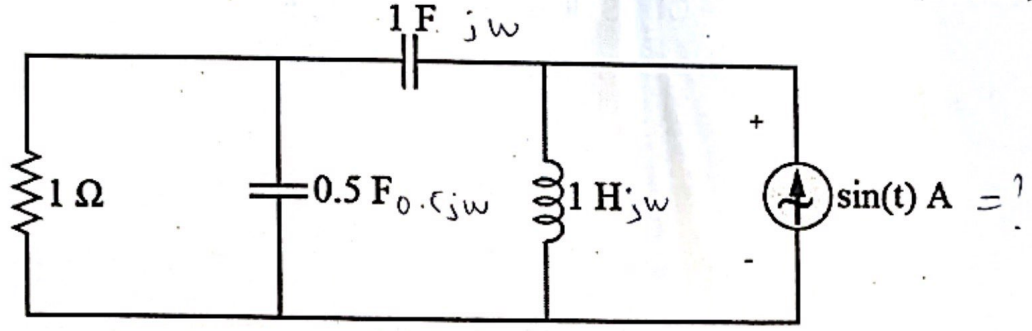
Question 3 (20 Marks)

The electric circuit is described below with four circuit elements and one current source sin(t) (A) with the voltage polarity given.

$\frac{1}{j\omega C}$

Student Name:.....
Student ID:.....

a. Use source transformation method to determine voltage across 1 Ω resistor in phasor and time domain. (10 Marks)
b. What is the average power dissipated in 1 Ω. (5 Marks)
c. What is the complex power S of the current source (sint) in the circuit. (5 Marks)

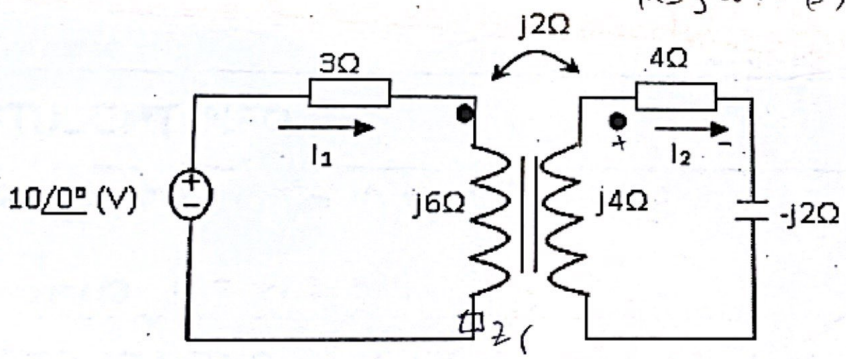


Question 4 (20 Marks)

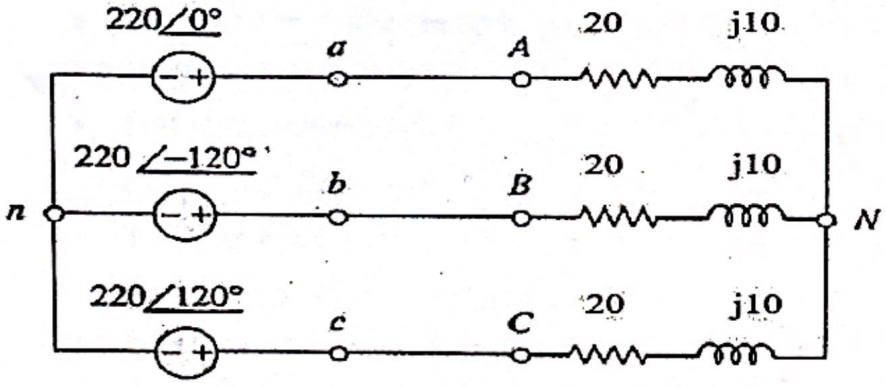
A linear transformer is depicted in the figure

a. Calculate the reflected impedance from secondary circuit to the primary winding. (10 Marks)
b. What is the complex power of the voltage source. (5 Marks)
c. What is the voltage for secondary coil. (5 Marks)

$M = jwM \Rightarrow M = j$ $M = jwH$
$\Rightarrow jL = jw$
$M = jwx$



Question 5 (20 Marks)



A three-phase circuit is described in the figure with voltage sources are 220 V_{rms}. Find

a. I_{aA}, I_{bB} and I_{cC}. (5 Marks)
b. V_{AN}, V_{BN} and V_{CN}. (5 Marks)