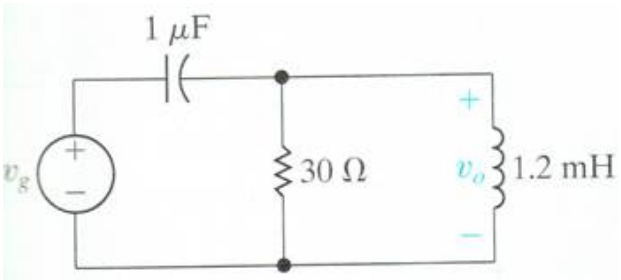
Started on	Monday, 30 January 2017, 11:21 AM
State	Finished
Completed on	Friday, 3 February 2017, 1:09 PM
Time taken	4 days 1 hour
Grade	**98.75** out of 100.00

Question 1

Correct

Mark 10.00 out of 10.00



P9.20_7ed

Given: $v_g(t) = 40 \cos(50{,}000\ t)$ Volts

Find the steady-state expression for $v_0(t)$.

$v_{0,\text{steady-state}}(t) =$ 42.42 ✓ cos(50,000 t + 45 ✓°) Volts

Numeric Answer

$v_{0,\text{steady-state}}(t) = 42.426 \cos(50{,}000\ t + 45°)$ Volts

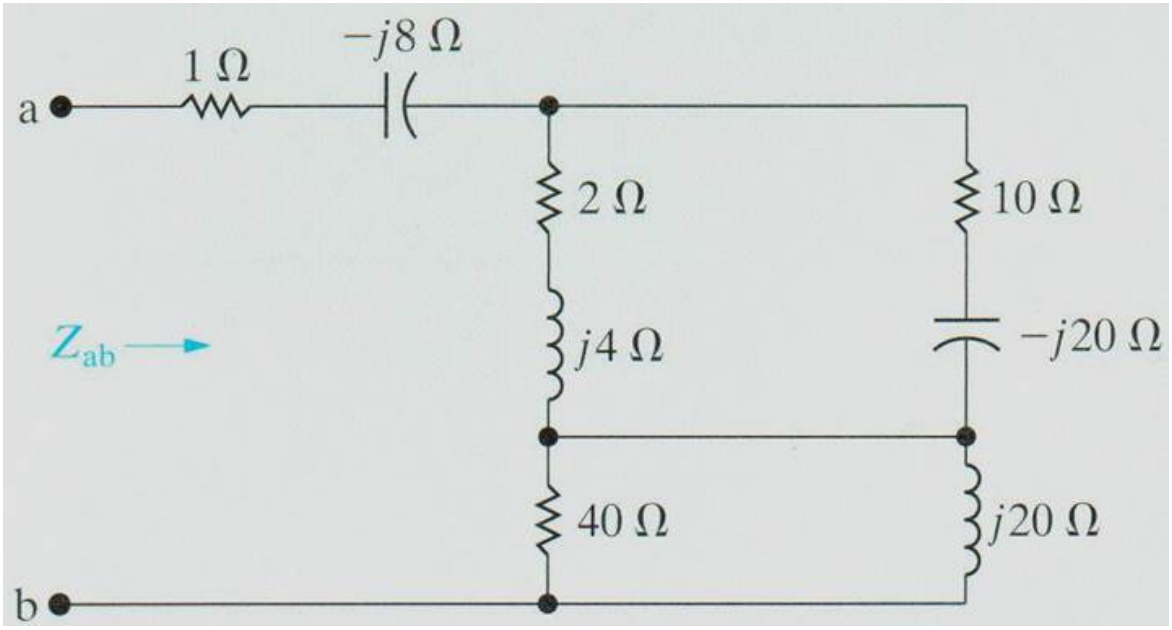
Correct

Marks for this submission: 10.00/10.00.

Question 2

Correct

Mark 10.00 out of 10.00



P9.33_7ed

Find the equivalent impedance Z_{ab} at the terminals a,b.

Z_{ab} = 12 + j 12 Ω (Ohm)

Numeric Answer

Z_{ab} = 12.0 + j 12.0 Ω (Ohm)

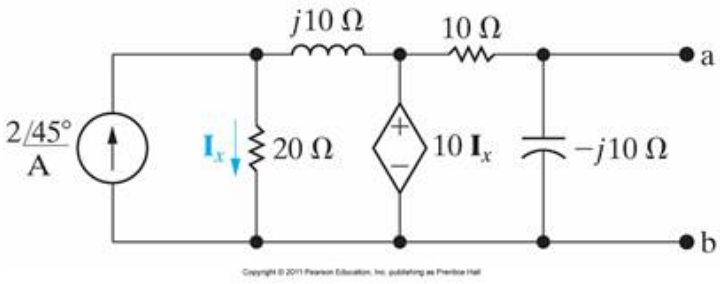
Correct

Marks for this submission: 10.00/10.00.

Question 3

Correct

Mark 10.00 out of 10.00



AP9.11_9ed

Find the Thévenin equivalent with respect to terminals a,b.

V_{Th} = Magnitude 10 ✓ with Angle 45 ✓ ° (Degrees) Volts

Z_{Th} = Magnitude 7.07 ✓ with Angle -45 ✓ ° (Degrees) W (Ohm)

Numeric Answer

V_{Th} = 10Ð45° Volts

Z_{Th} = 7.071Ð-45° Ohms

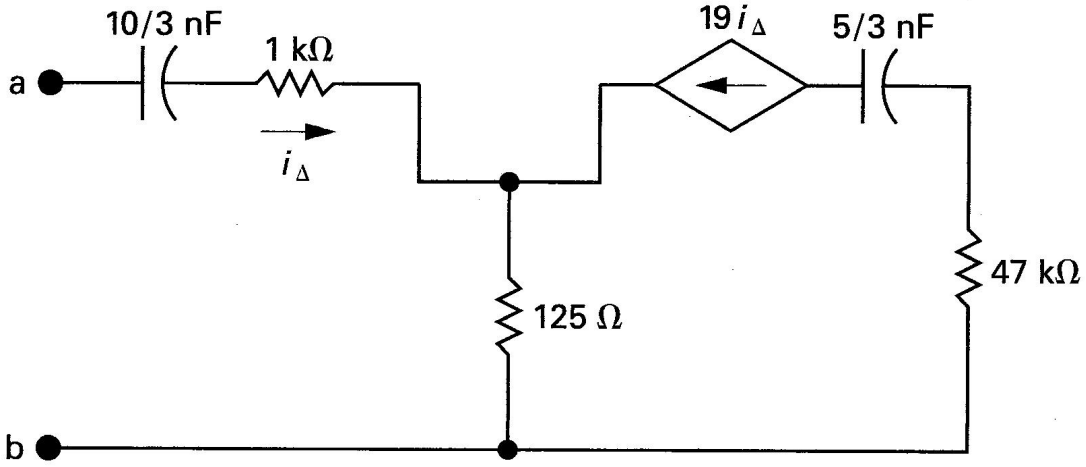
Correct

Marks for this submission: 10.00/10.00.

Question 4

Correct

Mark 10.00 out of 10.00



P9.36_6ed

Find the Thévenin impedance seen looking into the terminals ab of this circuit.

The frequency of operation is 25 krad/sec.

Z_{Th} = 3500 ✓ + j -12000 ✓ W (Ohm) in rectangular form

Numeric Answer

Z_{Th} = 3,500 – j 12, 000 W

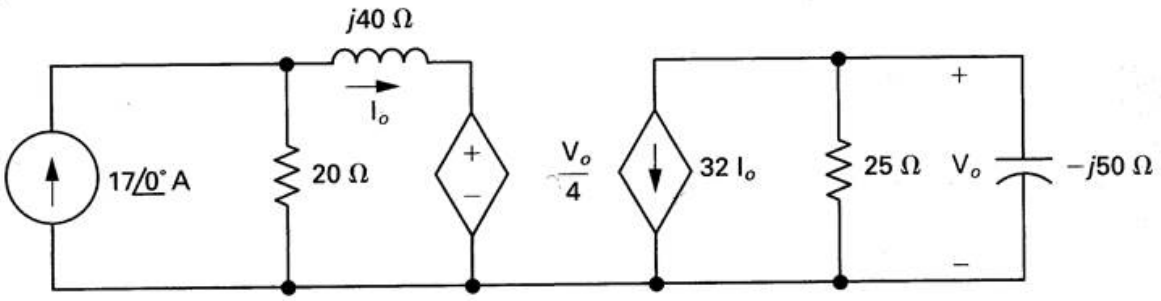
Correct

Marks for this submission: 10.00/10.00.

Question 5

Correct

Mark 10.00 out of 10.00



P9.56_6ed

Use the node-voltage method to find the follow phasor values.

$\mathbf{V_0}$ = 1280 ✓ + j 320 ✓ Volts

$\mathbf{I_0}$ = -1.4 ✓ + j -1.2 ✓ Amps

Numeric answer

$\mathbf{V_0}$ = 1,280 + j 320 V = 1319.394Đ 14.04° V

$\mathbf{I_0}$ = -1.40 - j 1.20 A = 1.844Đ -139.40° A

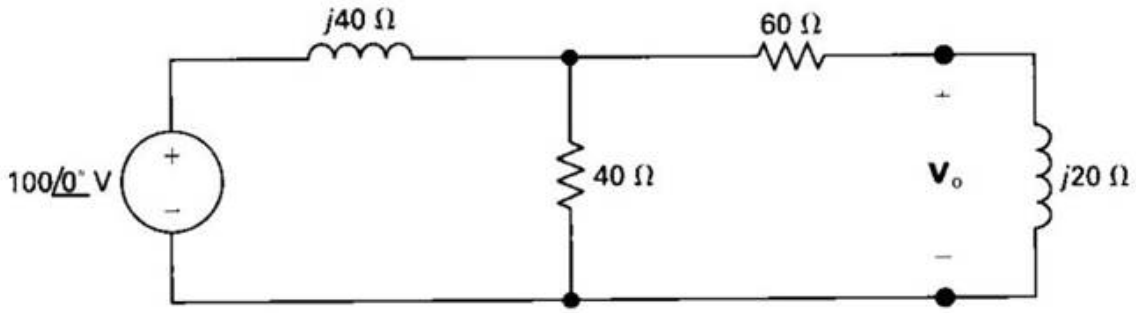
Correct

Marks for this submission: 10.00/10.00.

Question 6

Correct

Mark 10.00 out of 10.00



P9.47_6ed

Find $\mathbf{V_0}$ in this circuit.

$\mathbf{V_0}$ = Mag 15.81 ✓ with Angle 18.4 ✓ Degrees Volts

Numeric answer

$\mathbf{V_0}$ = 15.811 Đ18.43° Volts

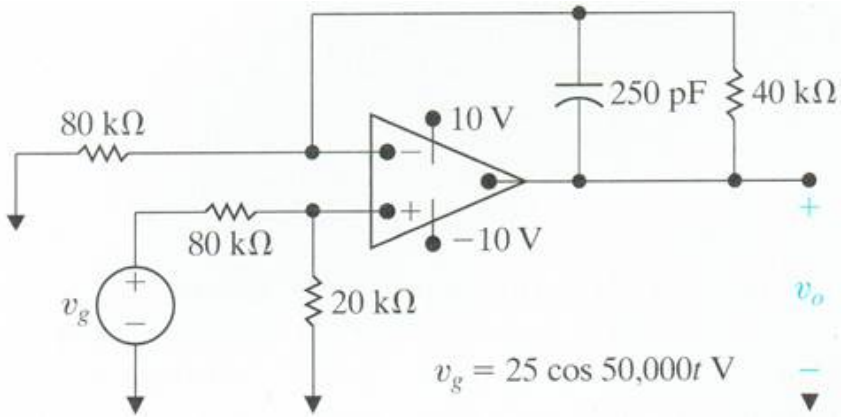
Correct

Marks for this submission: 10.00/10.00.

Question 7

Correct

Mark 10.00 out of 10.00



P9.81_7ed

The operational amplifier is ideal.

Given $v_g(t) = 25 \cos(50{,}000\ t)$ V

a) Find the steady-state output $v_0(t)$.

$v_0(t) =$ 7.054 ✓ $\cos(50{,}000\ t +$ -8.14 ✓ °) (Degrees) Volts

b) How large can the amplitude of $v_g(t)$ be before the amplifier saturates?

$|\ v_0(t)_{max}\ | \leq$ 35.46 ✓ Volts (less than or equal to)

Numeric answer

a) $v_0(t) = 7.07 \cos(50{,}000\ t - 8.13°)$ Volts

b) $|\ v_0(t)_{max}\ | <= 35.3557$ Volts

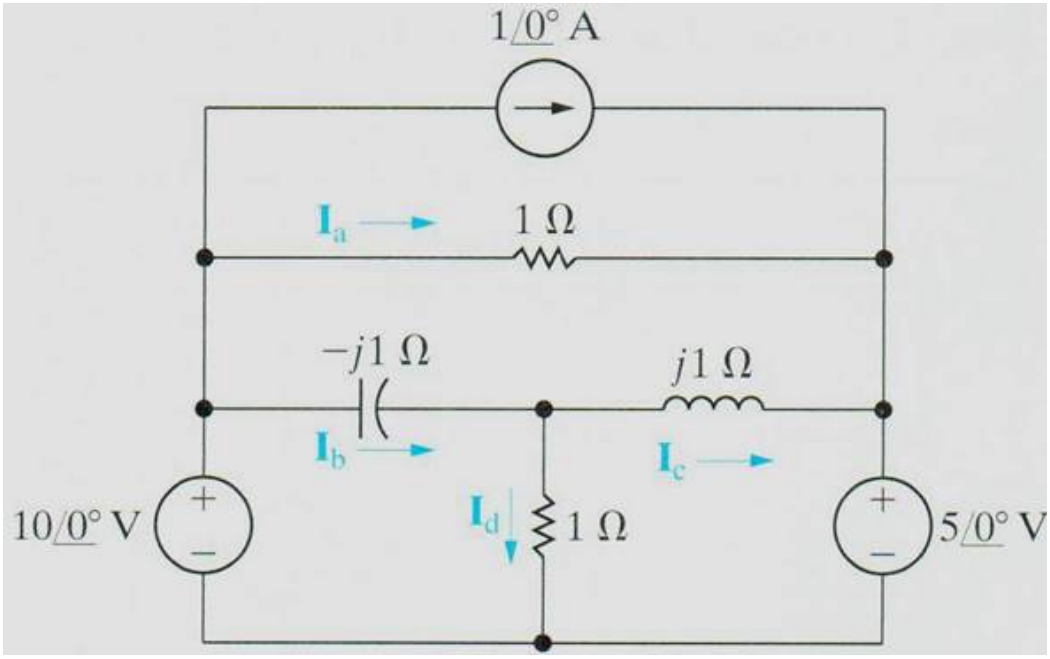
Correct

Marks for this submission: 10.00/10.00.

Question 8

Partially correct

Mark 8.75 out of 10.00



P9.62_7ed

Use the Mesh method and find the following currents:

I_a = Magnitude 5 ✓ with Angle 0 ✓ ° (Degrees) Amps

I_b = Magnitude 11.8 ✗ with Angle 63.43 ✓ ° (Degrees) Amps

I_c = Magnitude 7.07 ✓ with Angle 45 ✓ ° (Degrees) Amps

I_d = Magnitude 5 ✓ with Angle 90 ✓ ° (Degrees) Amps

Numeric Answer

I_a = 5 Ð0° A

I_b = 5 + j 10 A = 11.180 Ð63.43° A

I_c = 5 + j 5 A = 7.071 Ð45.0° A

I_d = 0 + j 5 A = 5 Ð90° A

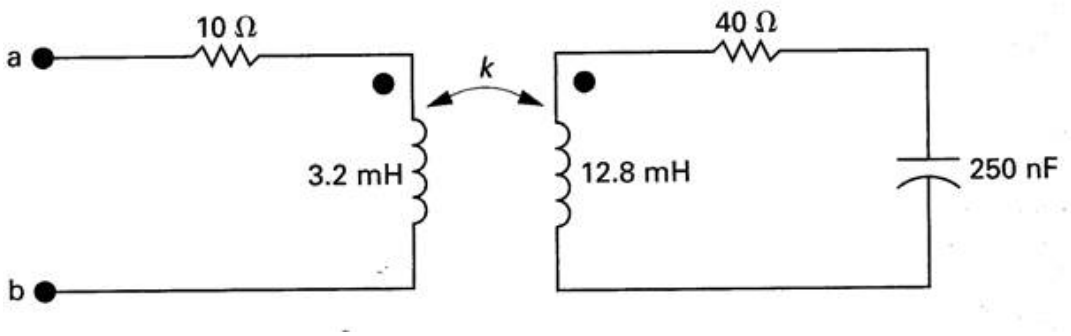
Partially correct

Marks for this submission: 8.75/10.00.

Question 9

Correct

Mark 10.00 out of 10.00



P9.63_6ed

Given driving source frequency = 25 krad/sec.

The coefficient of coupling *k* is adjusted so that Z_{ab} is purely resistive.

Find Z_{ab} for this condition.

Z_{ab} = 30 ✓ W (Ohm)

Numeric Answer

Z_{ab} = 30.0 W (Ohm)

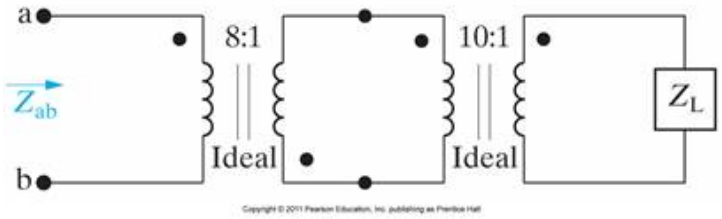
Correct

Marks for this submission: 10.00/10.00.

Question 10

Correct

Mark 10.00 out of 10.00



Find the impedance Z_{ab} if Z_L = 80 Ð60° W (Ohms).

$|Z_{ab}|$ = 512 ✓ kW (kilo Ohm)

Z_{ab} angle = 60 ✓ ° (Degrees)

Numeric Answer

Z_{ab} = 512 Ð60° kW (kilo Ohm)

Correct

Marks for this submission: 10.00/10.00.