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|---|---|
| **Started on** | Saturday, 26 November 2016, 4:40 PM |
| **State** | Finished |
| **Completed on** | Saturday, 26 November 2016, 4:40 PM |
| **Time taken** | 9 secs |
| **Grade** | **90.00** out of 100.00 |

**Question 1**

Correct

Mark 10.00 out of 10.00

CQ6.13
Given two inductors are magnetically coupled.
The coefficient of coupling k = 0.56
The self-inductances are:

$L_1 = 4.3$ H $\qquad$ $L_2 = 3.1$ H

Find the mutual inductance.

M = ?? H

Answer: 2.04

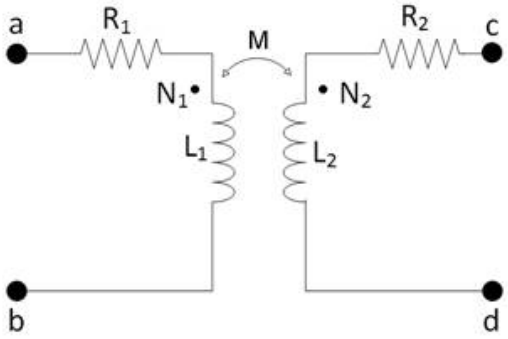
**Correct**

Marks for this submission: 10.00/10.00.

**Question 2**

Correct

Mark 10.00 out of 10.00




P6.39_6ed

Two magnetically coupled coils which have

$L_1 = 196$ mH $L_2 = 4$ mH $M = 23.8$ mH

a) What is the coefficient of coupling k?

k = 0.85 ✓

b) What is the largest possible value of M if the coupling was perfect?

M = 28 ✓ mH

c) Given that in this circuit $P_1 = P_2$, what is the turns ratio $N_1/N_2$?

$N_1/N_2$ = 7 ✓

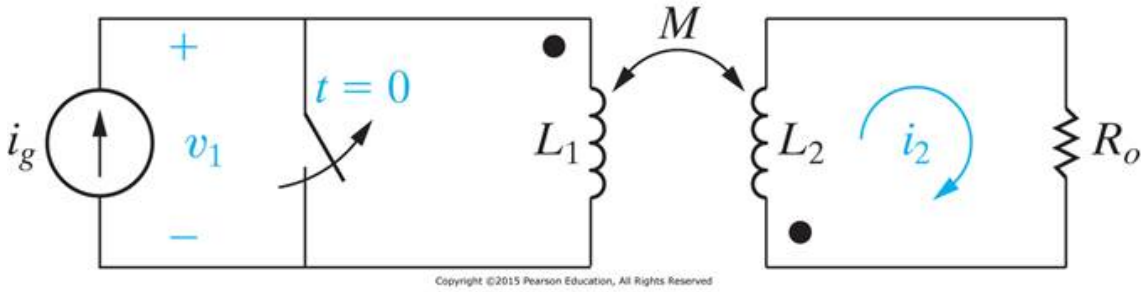
**Correct**

Marks for this submission: 10.00/10.00.

**Question 3**

Correct

Mark 10.00 out of 10.00





P6.39_10ed

Given: $L_1 = 5$ H $\quad L_2 = 0.2$ H $\quad M = 0.5$ H $\quad R_0 = 10\ \Omega$ (Ohm)

$i_g = -10 + e^{-10t}$ A for $t \geq 0$ $\quad i_2 = 0.625e^{-10t} - 0.250\,e^{-50t}$ A for $t \geq 0$

There is no energy stored in this circuit at the time the switch is opened.

a) Find the voltage $v_1(t)$ at $t = 0^+$ sec just as the switch opens.

$v_1(t = 0^+ \text{ sec}) =$ -46.875 ✓ V

b) Find the voltage $v_1(t)$ at $t = 0.2$ sec after the switch opens.

$v_1(t = 0.2 \text{ sec}) =$ -7.189 ✓ V

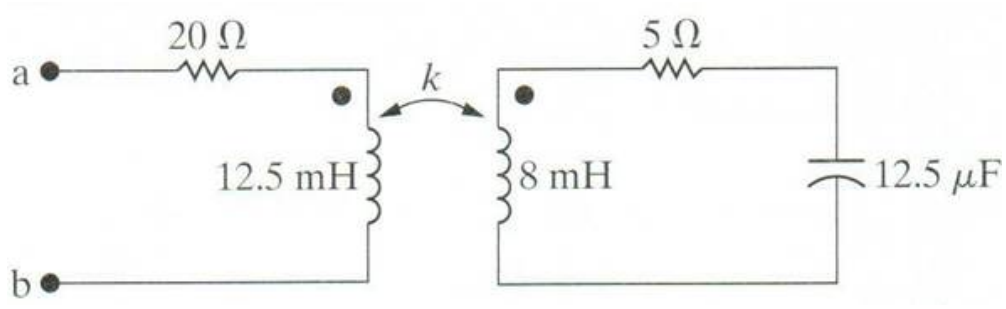
**Correct**

Marks for this submission: 10.00/10.00.

**Question 4**

Correct

Mark 10.00 out of 10.00




P9.69_7ed

Given driving source frequency = 4 krad/sec.

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

a) Find k for this condition.

k = 0.66 ✓

b) Find $Z_{ab}$ for this condition.

$Z_{ab} =$ 40.83 ✓ Ω (Ohm)

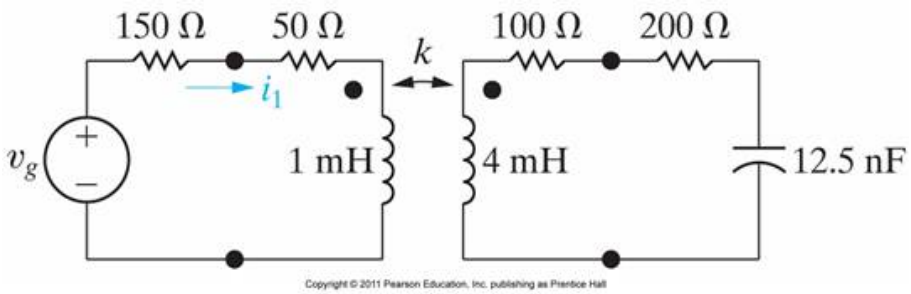
**Correct**

Marks for this submission: 10.00/10.00.

**Question 5**

Correct

Mark 10.00 out of 10.00




P9.76_9ed

The sinusoidal source is operating at 200 krad/sec (kilo rad/sec).

The coefficient of coupling *k* is adjusted until the peak amplitude of $i_1$ is maximum.

Given $v_g$ = 560 cos(200,000t) V.

a) What is the value of *k*? [Hint: Use reflected impedance which includes *k* and determine when $Z_{in}$ is minimum which yields the max current]

*k* = 0.3536 ✓

b) What is the peak amplitude of $i_1$?

$|i_1|$ = 2 ✓ A

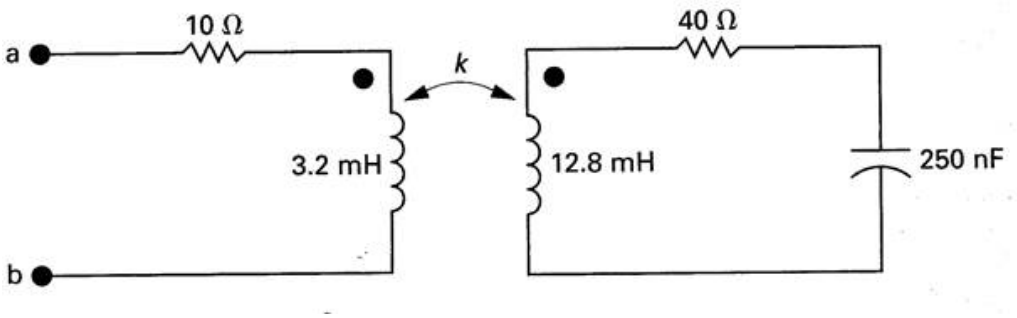
**Correct**

Marks for this submission: 10.00/10.00.

**Question 6**

Incorrect

Mark 0.00 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.

$Z_{ab}$ = 22.48 ✗ Ω (Ohm)

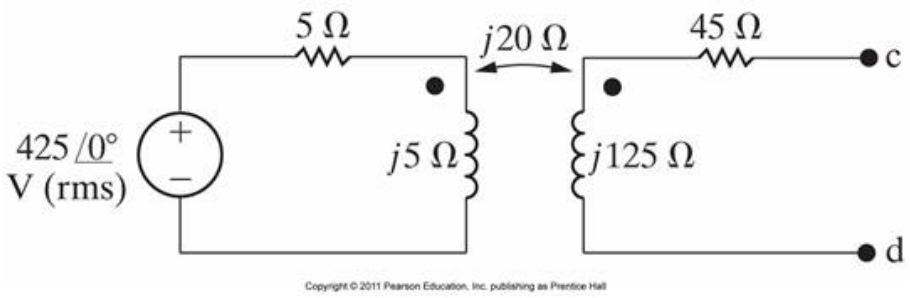
**Incorrect**

Marks for this submission: 0.00/10.00.

**Question 7**

Correct

Mark 10.00 out of 10.00




P9.78_9ed

Find the Thevenin equivalent of this circuit w.r.t. terminals c,d.

$|Z_{Th}|$ = 120.21 ✓ Ω (Ohms) $Z_{Th}$ angle = 45 ✓ ° (Degrees)

$|V_{Th}|$ = 1202.1 ✓ Vrms $V_{Th}$ angle = 45 ✓ ° (Degrees)

**Correct**

Marks for this submission: 10.00/10.00.

**Question 8**

Correct

Mark 10.00 out of 10.00

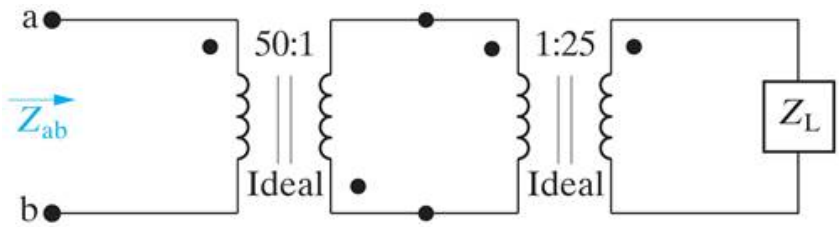



Figure: 09-58-55P9.77



P9.77_8ed

Given: $Z_L = 200 + j\,150\ \Omega$.

Find the impedance $Z_{ab}$

$Z_{ab}$ = Magnitude 1000 ✓ at Angle 36.87 ✓ ° (Degrees) Ω (Ohm)

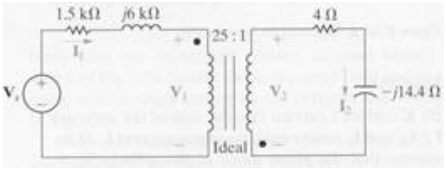
**Correct**

Marks for this submission: 10.00/10.00.

**Question 9**

Correct

Mark 10.00 out of 10.00




AP9.15_9ed

The source voltage is 25 at angle 0° kV (kilo Volts).

Find the amplitude and phase angle of $\mathbf{V}_2$ and $\mathbf{I}_2$.

$|\mathbf{V}_2|$ = 1868.15 ✓ Volts

Phase angle $\mathbf{V}_2$ = 142.39 ✓° (Degrees)

$|\mathbf{I}_2|$ = 125 ✓ A

Phase angle $\mathbf{I}_2$ = 216.87 ✓° (Degrees)

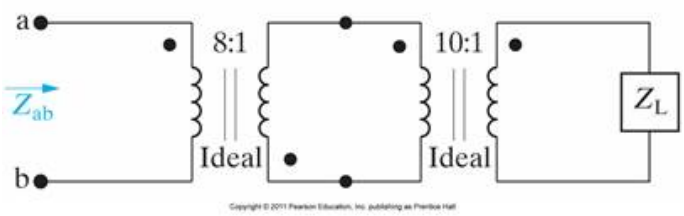
**Correct**

Marks for this submission: 10.00/10.00.

**Question 10**

Correct

Mark 10.00 out of 10.00




P9.83_6ed

Find the impedance $Z_{ab}$ if $Z_L$ = 80 at angle 60° Ω (Ohms).

$|Z_{ab}|$ = 512 ✓ kΩ (kilo Ohm)

$Z_{ab}$ angle = 60 ✓° (Degrees)

**Correct**

Marks for this submission: 10.00/10.00.