Started on	Wednesday, 30 December 2020, 10:00 AM
State	Finished
Completed on	Wednesday, 30 December 2020, 12:55 PM
Time taken	2 hours 55 mins
Marks	23.00/40.00
Grade	**5.75** out of 10.00 (**58**%)

Question 1

Correct

Mark 1.50 out of 1.50

A coil consists of 1000 turns of copper wire having a cross-sectional area of 1 millimeter-square. The mean length per turn is 40 cm and the resistivity of copper is 0.02 $\mu\Omega$-m.

The resistance (in ohms) of the coil

8 ✓

One possible correct answer is: 8

The power absorbed (in Watts) by the coil when connected across 120 Volts D.C. supply

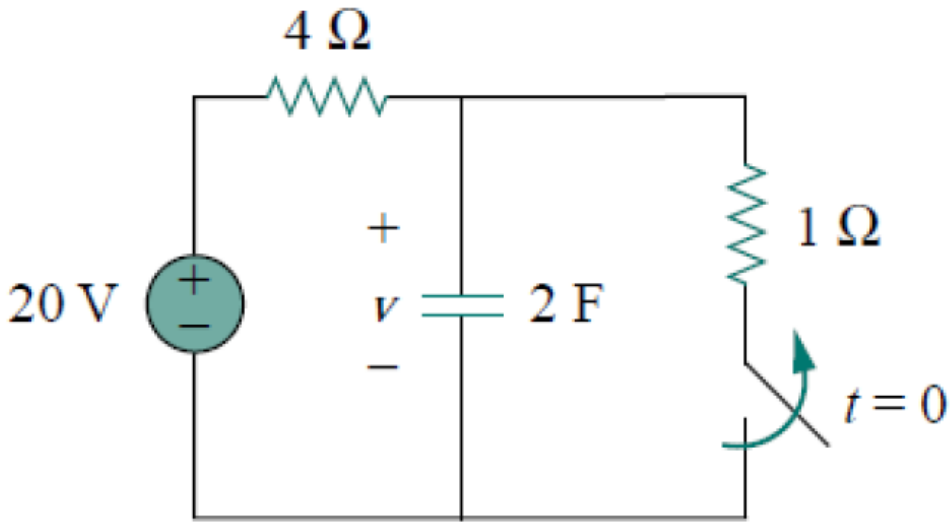
1800 ✓

One possible correct answer is: 1800

Question 2

Correct

Mark 2.00 out of 2.00



The capacitor's voltage for t < 0 is

4

One possible correct answer is: 4

Capacitor's voltage at t = 3 seconds is

9.005

One possible correct answer is: 9.003

Your answer is correct.

Question 3

Partially correct

Mark 0.50 out of 2.00

Three loads are connected in parallel to a 120 Vrms source with zero degrees phase. Load 1 absorbs 60 kVAR at pf = 0.85

lagging, load 2 absorbs 90 kW and 50 kVAR leading, and load 3 absorbs 100 kW at pf = 1.

Equivalent impedance is (insert the real part in the first box and the imaginary part in the second box)

0.043€ 0.016 ✗

One possible correct answer is: 0.05, 0.0017

Power factor of the parallel combination is

0.93 ✓

One possible correct answer is: 0.9994

Current supplied by the source is (insert the magnitude in the first box and the phase in the second box)

2569.5 20.15 ✗

One possible correct answer is: 2.391, -0.083

Your answer is partially correct.

You have correctly answered 1 part(s) of this question.

Question 4

Partially correct

Mark 1.00 out of 2.00

Find the complex power when

P = 169W and Q = 150VAR (insert the real part in the first box and the imaginary part in the second box)

169 | 150 ✗

One possible correct answer is: 269, -150

Q = 2000V and pf = 0.9 (lagging) (insert the real part in the first box and the imaginary part in the second box)

4129.4 ✓

One possible correct answer is: 4129

S = 600VA and Q = 450VAR (inductive) (insert the real part in the first box and the imaginary part in the second box)

396.8 | 450 ✓

One possible correct answer is: 396.9, 450

Vrms = 220V, P = 1kW, |Z| = 40 Ohms (Inductive) (insert the real part in the first box and the imaginary part in the second box)

1 | 0.681 ✗

One possible correct answer is: 1000, 681.2

Your answer is partially correct.

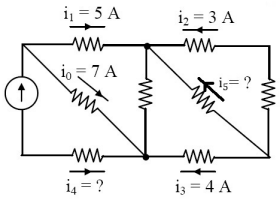
You have correctly answered 2 part(s) of this question.

Question 5

Correct

Mark 1.00 out of 1.00

In the circuit given below:



What is the value of current i4 (in Ampere)

-12

One possible correct answer is: -12

What is the value of current i5 (in Ampere)

-7

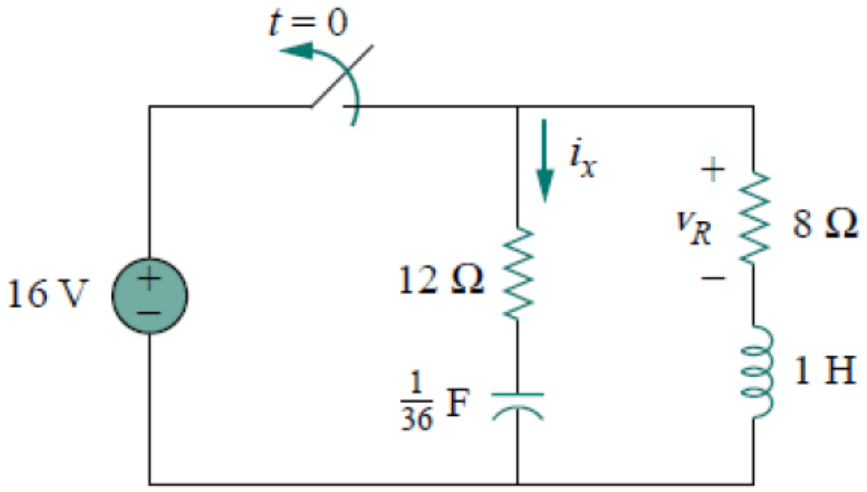
One possible correct answer is: -7

Your answer is correct.

Question 6

Partially correct

Mark 1.00 out of 4.00



Sum of the roots of the characteristic equation is

-20 ✓

One possible correct answer is: -20

ix at t = 3 seconds is

-0.007 ✗

One possible correct answer is: -0.00185

vR at t = 5 seconds is

0.0001 ✗

One possible correct answer is: 0.000272

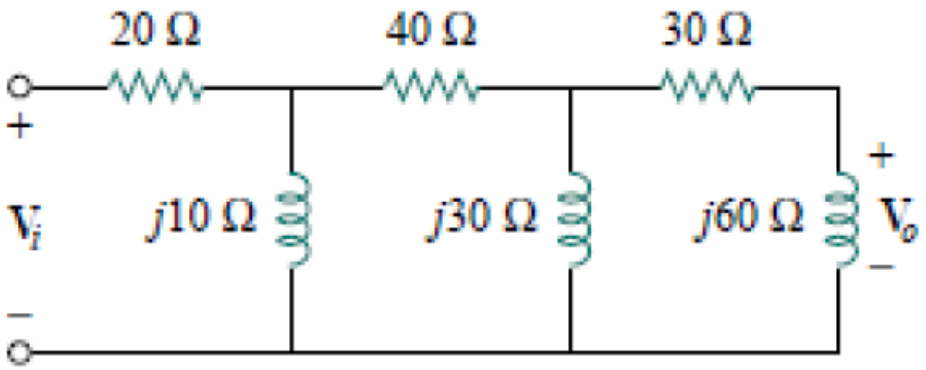
Your answer is partially correct.

You have correctly answered 1 part(s) of this question.

Question 7

Incorrect

Mark 0.00 out of 2.00



The phase shift of Vo with respect to Vi is

90 ✗

One possible correct answer is: 140.2

The magnitude of the output Vo when input is 120V

40 ✗

One possible correct answer is: 18.43

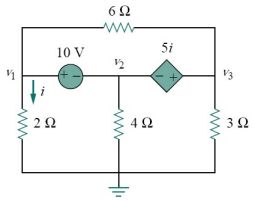
Your answer is incorrect.

Question 8

Correct

Mark 3.00 out of 3.00

Apply the nodal analysis in the circuit shown below:



Find $v1$ (in Volts) in the circuit

3.04

One possible correct answer is: 3.04

Find $v2$ (in Volts) in the circuit

-6.95

One possible correct answer is: -6.96

Find $v3$ (in Volts) in the circuit

0.65

One possible correct answer is: 0.65

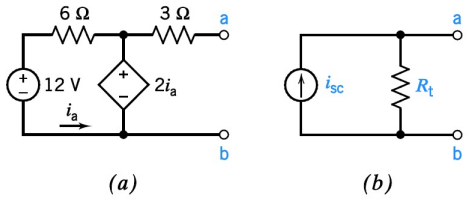
Your answer is correct.

Question 9

Correct

Mark 2.00 out of 2.00

Determine values of Rt (in Ohms) and isc (in Amperes) that cause the circuit shown in Fig. b to be the Norton equivalent circuit of the circuit in Fig. a.



(a) *(b)*

The value of isc (in Amperes)

-2

One possible correct answer is: -2

The value of Rt (in Ohms)

3

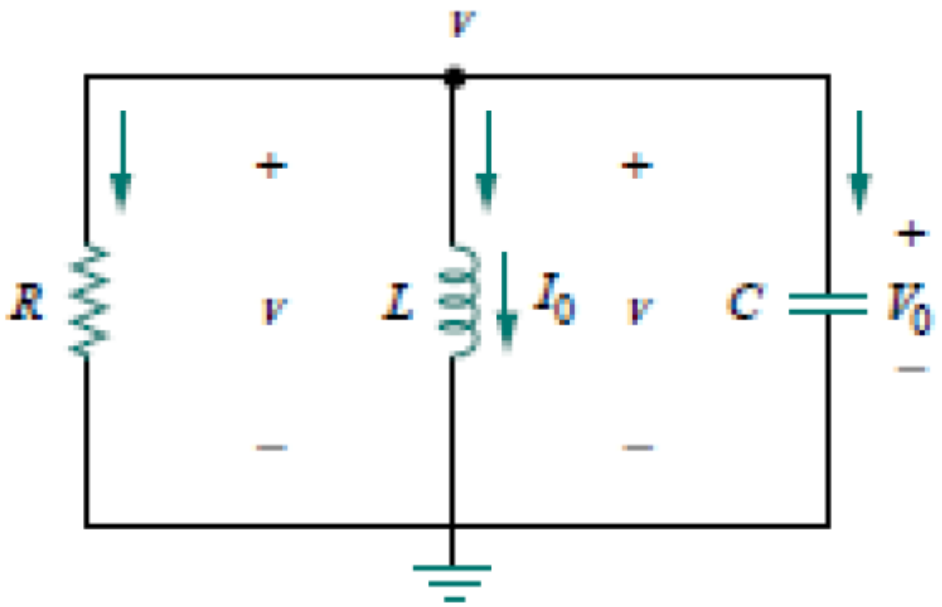
One possible correct answer is: 3

Your answer is correct.

Question 10

Incorrect

Mark 0.00 out of 2.00



With R = 2 Ohms, L = 0.4H and C = 25mF, v0(0) = 0, i0(0) = 3A, then v(t) at t = 0.1 seconds is

4.41 ✗

One possible correct answer is: -4.41455

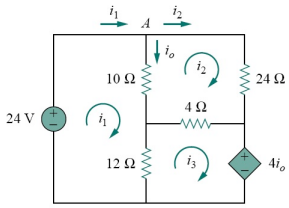
Your answer is incorrect.

Question 11

Incorrect

Mark 0.00 out of 2.00

Use mesh analysis in the circuit shown below:



Find the current $i1$ (in Amperes)

1.24 ✗

One possible correct answer is: 2.25

Find the current $i2$ (in Amperes)

0.39 ✗

One possible correct answer is: 0.75

Find the current $i3$ (in Amperes)

0.62 ✗

One possible correct answer is: 1.5

Find the current $i0$ (in Amperes)

0.85 ✗

One possible correct answer is: 1.5

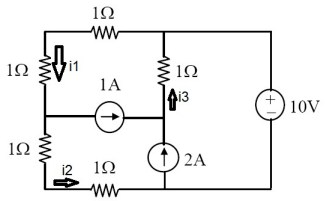
Your answer is incorrect.

Question 12

Partially correct

Mark 0.50 out of 2.00

Consider the circuit below:



Find the value of i1 (in Ampere)

2 ✗

One possible correct answer is: 3

Find the value of i2 (in Ampere)

3 ✗

One possible correct answer is: 2

Find the value of i3 (in Ampere)

3 ✓

One possible correct answer is: 3

Power supplied by the voltage source (in Watts)

-10 ✗

One possible correct answer is: 0

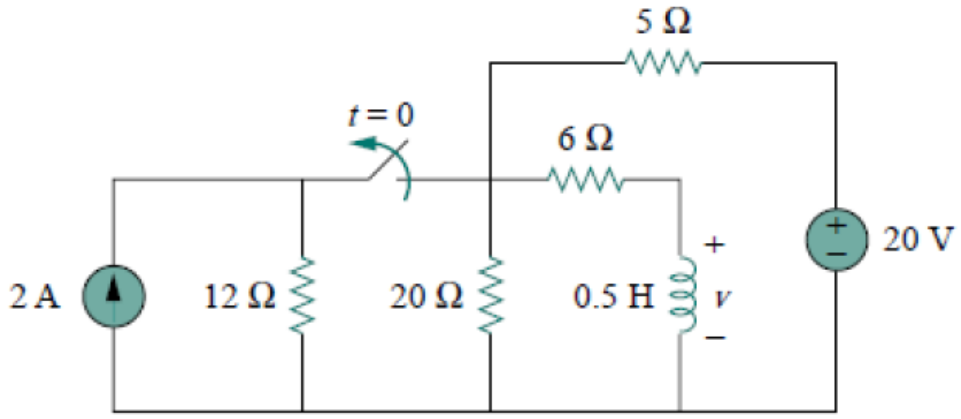
Your answer is partially correct.

You have correctly answered 1 part(s) of this question.

Question 13

Incorrect

Mark 0.00 out of 2.00



v(t) at t = 0.04 seconds is

3.59 ✗

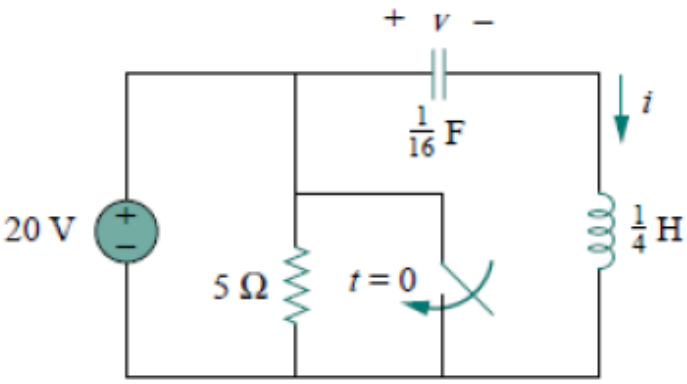
One possible correct answer is: -1.7973

Your answer is incorrect.

Question 14

Correct

Mark 2.00 out of 2.00



Value of i(t) at t = pi/24 seconds is

-8.66 ✓

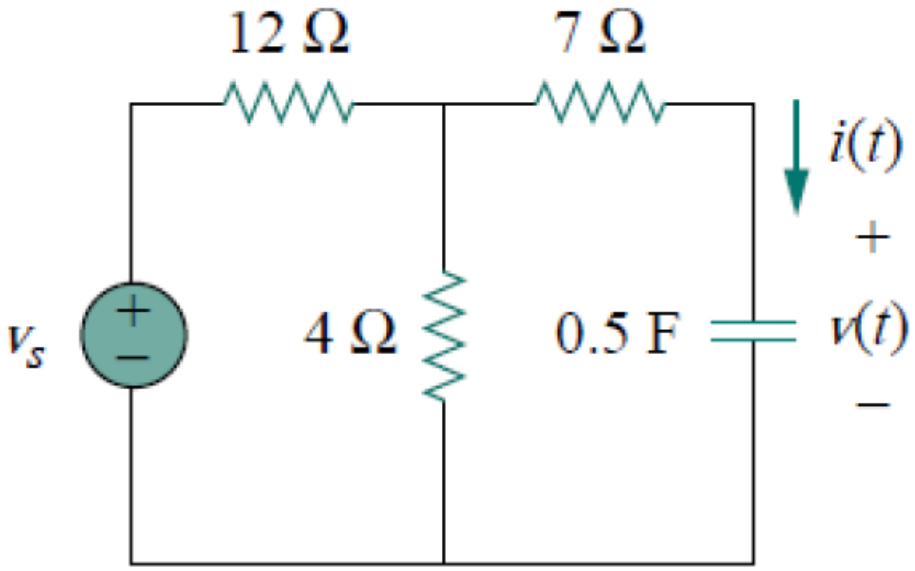
One possible correct answer is: -8.66

Your answer is correct.

Question 15

Partially correct

Mark 1.00 out of 2.00



The input Vs = 5 u(t), where u(t) is the step function. The step response v(t) at t = 10 seconds is

1.08 ✓

One possible correct answer is: 1.08083

The input Vs = 5 u(t), where u(t) is the step function. Step response i(t) at t = 5 seconds is

0.79 ✗

One possible correct answer is: 0.0459

Your answer is partially correct.

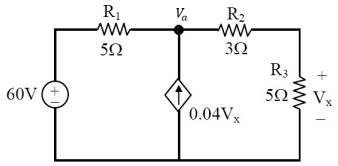
You have correctly answered 1 part(s) of this question.

Question 16

Correct

Mark 2.00 out of 2.00

Consider the circuit shown below



The absolute value of current flowing through resistance R1 in Ampere

4

One possible correct answer is: 4

The absolute value of current flowing through resistance R2 in Ampere

5

One possible correct answer is: 5

The value of the node voltage Va in Volts

40

One possible correct answer is: 40

Your answer is correct.

Question 17

Correct

Mark 1.50 out of 1.50

Consider the circuits shown in Fig. a and Fig.b below, where each resistor has a value equal to 1 Ω:

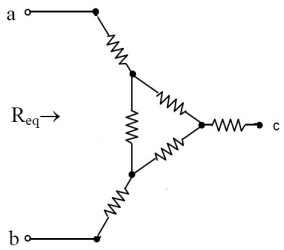


Fig. a

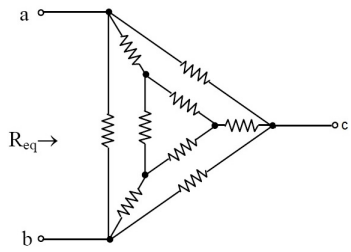


Fig. b

The equivalent resistance (in Ohms) across the terminals a and b in Fig. a is?

2.67

One possible correct answer is: 2.67

The equivalent resistance (in Ohms) across the terminals a and b in Fig. b is?

0.53

One possible correct answer is: 0.53

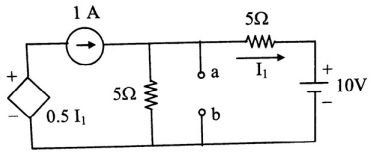
Your answer is correct.

Question 18

Correct

Mark 2.00 out of 2.00

For the circuit shown below, Thevenin's voltage and Thevenin's resistance between terminals a and b are:



Select one:

- 4 Volts and 2 Ohm
- 5 Volts and 2 Ohm
- 7.5 Volts and 2.5 Ohms ✓
- 3 Volts and 2.5 Ohms

Your answer is correct.

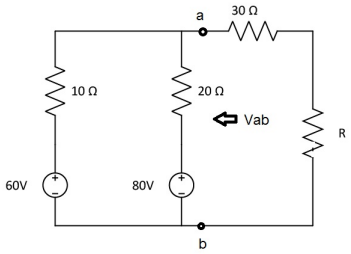
The correct answer is: 7.5 Volts and 2.5 Ohms

Question 19

Partially correct

Mark 2.00 out of 3.00

Consider the circuit shown below, where R is the load resistance:



Find the open circuit voltage between terminals a and b, i.e., Vab in volts

66.67 ✓

One possible correct answer is: 66.67

Find the value of load resistance R (in ohms) for maximum power transfer

36.67 ✓

One possible correct answer is: 36.67

Find the value of maximum power transferred to the load R in watts

30.30 ✗

One possible correct answer is: 60.61

Your answer is partially correct.

You have correctly answered 2 part(s) of this question.

◄ Solutions to Tutorial 5

Jump to...

Lecture 19 (Digital Electronics) ►