Started on	Wednesday, 19 August 2020, 9:46 AM
State	Finished
Completed on	Wednesday, 19 August 2020, 10:56 AM
Time taken	1 hour 10 mins
Grade	**72.00** out of 150.00 (**48**%)

Question 1

Correct

Mark 2.00 out of 2.00

A series RC circuit is fed from single phase AC supply. If the supply frequency is increased, power factor of the circuit will:

Select one:

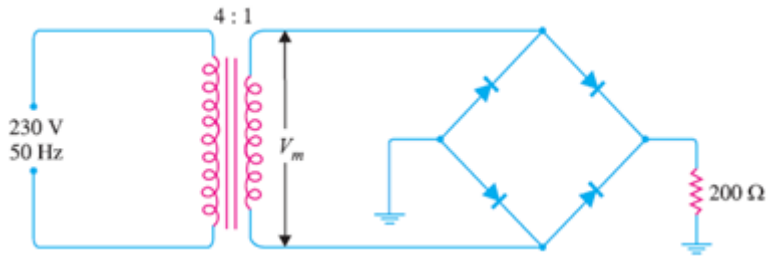
- A. Increase ✓
- B. Decrease
- C. Remains Same
- D. None of these

Question 2

Incorrect

Mark 0.00 out of 2.00

In the bridge type circuit shown in Figure, the diodes are assumed to be ideal. Find peak inverse voltage and output frequency. Assume primary to secondary turns to be 4:1 and input AC supply voltage is 230 V (rms), 50 Hz.



Select one:

- A. 91.5 V & 50 Hz
- B. 81.3 V & 100 Hz
- C. 60.2 V & 100 Hz ✗
- D. 75.2 V & 150 Hz

Question 3

Correct

Mark 2.00 out of 2.00

The two wattmeter method for 3-phase power measurement is applicable for

Select one:

- A. Only star connected system
- B. Only delta connected system
- C. Both star connected and delta connected system ✓
- D. None of the above

Question 4

Incorrect

Mark 0.00 out of 2.00

In a star connected system, the current flowing through the line is

Select one:

- A. Greater than the phase current ✗
- B. Equal to the phase current
- C. Lesser than the phase current
- D. None of these

Question 5

Correct

Mark 2.00 out of 2.00

Amplifiers and oscillators using BJT, operate in ..... region

Select one:

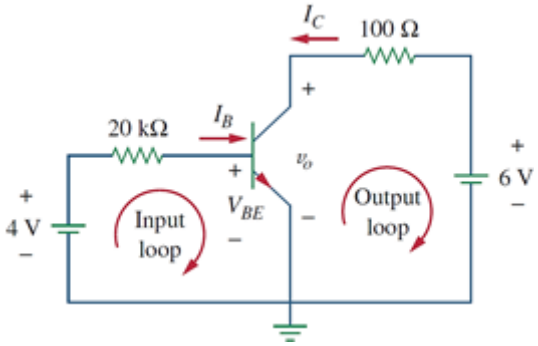
- A. Inverted mode
- B. Active ✓
- C. Saturation
- D. Cut-off

Question 6

Incorrect

Mark 0.00 out of 2.00

Find I_B in the transistor circuit of given Figure. Assume that the transistor operates in the active mode, V_{BE} =0.7 V and that β=50.



Select one:

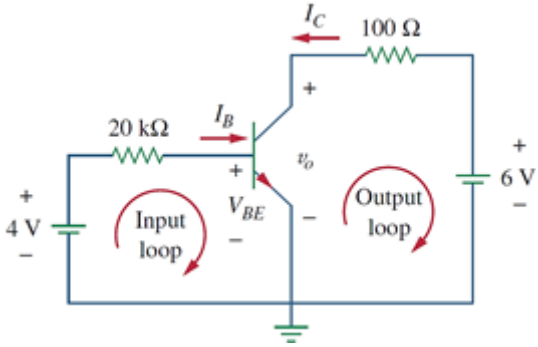
- A. 100 μA
- B. 135 μA ✗
- C. 165 μA
- D. 105 μA

Question 7

Incorrect

Mark 0.00 out of 2.00

Find I_C in the transistor circuit of given Figure. Assume that the transistor operates in the active mode, V_{BE} =0.7 V and that β=50.



Select one:

- A. 7.75 mA
- B. 5 mA ✗
- C. 10 mA
- D. 8.25 mA

Question 8

Incorrect

Mark 0.00 out of 2.00

A transistor has an I_C of 100mA and I_B of 0.5mA. What is the value of α_{dc}?

Select one:

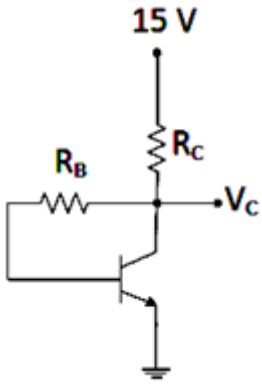
- A. 0.659
- B. 0.543 ✗
- C. 0.995
- D. 0.787

Question 9

Incorrect

Mark 0.00 out of 2.00

In the given circuit, the transistor has β = 75, V_{BE} =0.7 V and the collector voltage V_c =9V. Then the ratio of R_B/R_C is



Select one:

- A. 105.13
- B. 99 ✗
- C. 76
- D. 108

Question 10

Correct

Mark 2.00 out of 2.00

The power consumed in a circuit element will be least when the phase difference between the current and voltage is

Select one:

- A. 90° ✓
- B. 0°
- C. 60°
- D. 180°

Question 11

Correct

Mark 2.00 out of 2.00

For the same peak value which of the following wave will have the highest RMS value?

Select one:

- A. Square wave ✓
- B. Half-wave rectified sine wave
- C. Triangular wave
- D. Sine wave

Question 12

Correct

Mark 2.00 out of 2.00

The line A to neutral voltage is $10\angle 15^\circ$ V . For a balanced three phase star-connected load with phase sequence ABC. The voltage of line B with respect to line C is given by

Select one:

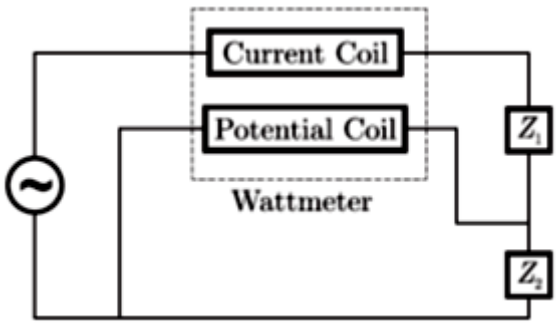
- A. $10\sqrt{3}\angle 105^\circ V$
- B. $-10\sqrt{3}\angle 90^\circ V$
- C. $10\sqrt{3}\angle -75^\circ V$ ✓
- D. $10\angle 105^\circ V$

Question 13

Incorrect

Mark 0.00 out of 2.00

A wattmeter is connected as shown in figure. The wattmeter reads.



Select one:

- A. Power consumed by Z_2
- B. Zero always
- C. Total power consumed by Z_1 & Z_2
- D. Power consumed by Z_1 ✗

Question 14

Correct

Mark 2.00 out of 2.00

In a series RLC circuit at resonance, the magnitude of the voltage developed across the capacitor

Select one:

- A. can be greater than the input voltage, however, it is 90^o out of phase with input voltage ✓
- B. can be greater than the input voltage, and is in phase with input voltage
- C. is always zero
- D. can never be greater than the input voltage

Question 15

Incorrect

Mark 0.00 out of 2.00

A two-port device is defined by the following pair of equations:

$i_1 = 2v_1 + v_2$ and $i_2 = v_1 + v_2$; Its impedance parameters (z_{11}, z_{12}, z_{21}, z_{22}) are given by

Select one:

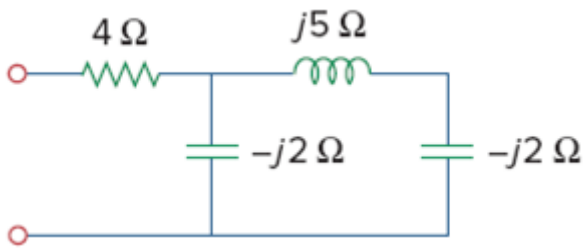
- A. (2,1,1,1) ✗
- B. (1,-1,-1,2)
- C. (1,1,1,2)
- D. (2,-1,-1,1)

Question 16

Incorrect

Mark 0.00 out of 2.00

Obtain the power factor for the circuit in figure below.



Select one:

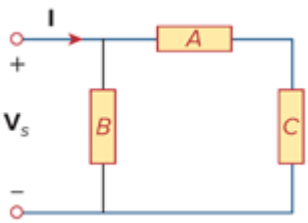
- A. pf= 1
- B. pf = 0.8547 (leading) ✗
- C. pf = 0.5547 (leading)
- D. pf = 0.7547 (leading)

Question 17

Incorrect

Mark 0.00 out of 2.00

In the circuit of the given figure, device A receives 2 kW at 0.8 pf lagging, device B receives 3 kVA at 0.4 pf leading, while device C is inductive and consumes 1 kW and receives 500 VAR. Determine the power factor of the entire system.



Select one:

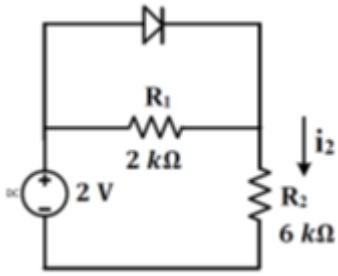
- A. pf = 0.9845 (leading)
- B. pf = 0.8547 (leading) ✗
- C. pf= 1
- D. pf = 0.7547 (leading)

Question 18

Correct

Mark 2.00 out of 2.00

Assume that the diode in the figure has V_{on} = 0.7 V, but is otherwise ideal. The magnitude of the current i_2 (in mA) is equal to _____



Select one:

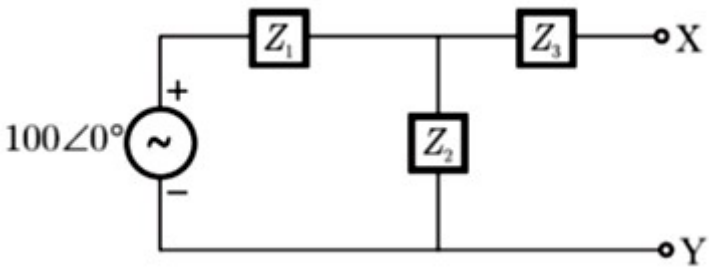
- A. 0.3 mA
- B. 0.216 mA ✓
- C. 0.5 mA
- D. 0.1 mA

Question 19

Incorrect

Mark 0.00 out of 2.00

In the figure, $Z_1 = 10\angle -60^\circ, Z_2 = 10\angle 60^\circ and\ Z_3 = 30 + j40$. Thevenin impedance seen form X-Y is



Select one:

- A. \(\ 35 \angle 75^ {\circ} \)
- B. \(\ 60 \angle 30^ {\circ} \)

✗

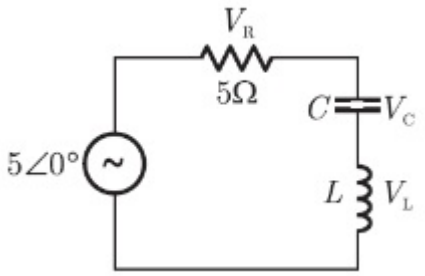
- C. \(\ 70 \angle 30^ {\circ} \)
- D. \(\ 56.55 \angle 45^ {\circ} \)

Question 20

Incorrect

Mark 0.00 out of 2.00

In the circuit of given figure, the magnitude of V_L and V_C are twice that of V_R. Given that f=50 Hz , Calculate the inductance of the coil.



Select one:

- A. 1.32 H
- B. 5.3 H ✗
- C. 31.83 mH
- D. 2.14 mH

Question 21

Correct

Mark 2.00 out of 2.00

The RMS value of the voltage $u(t)= 3 + 4 \cos (3t)$ is

Select one:

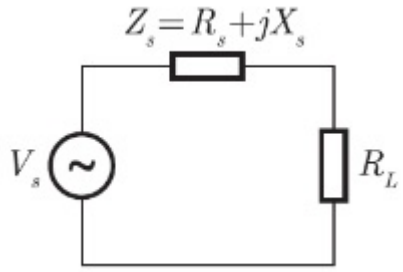
- A. \(3+2 \sqrt{3} \)
- B. \(\sqrt{17} \) ✓
- C. 3
- D. 3

Question 22

Incorrect

Mark 0.00 out of 2.00

A non-ideal voltage source V_s has an internal impedance of Z_s (Refer to the circuit below). If a purely resistive load is to be chosen that maximizes the power transferred to the load, its value must be



Select one:

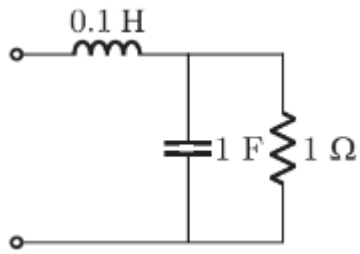
- A. Equal to imaginary part of Z_s
- B. Equal to real part of Z_s ✗
- C. 0
- D. Equal to magnitude of Z_s

Question 23

Correct

Mark 2.00 out of 2.00

Determine the frequency at which the given circuit behaves as a purely resistive circuit.



Select one:

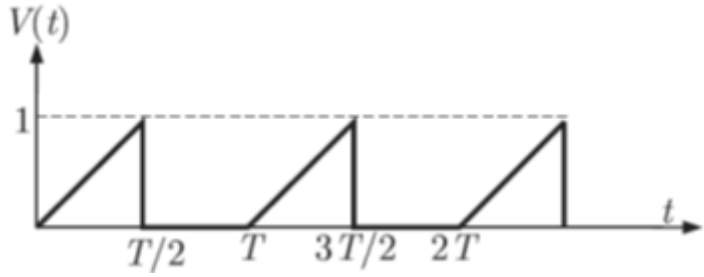
- A. 4 rad/s
- B. 3 rad/s ✓
- C. 2 rad/s
- D. 1 rad/s

Question 24

Incorrect

Mark 0.00 out of 2.00

For the triangular waveform shown in the figure, the RMS value of the voltage is equal to



Select one:

- A. \(\frac{1}{3} \)
- B. \(\sqrt { \frac{1}{3}} \)
- C. \(\sqrt { \frac{1}{6}} \)
- D. \(\sqrt { \frac{2}{3}} \)

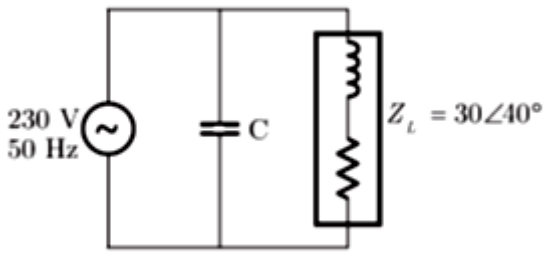
✗

Question 25

Incorrect

Mark 0.00 out of 2.00

In the circuit shown in Figure, what value of *C* will cause a unity power factor at the ac source?



Select one:

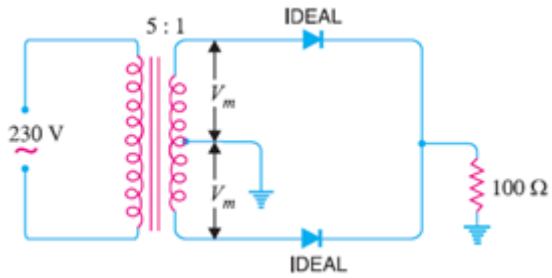
- A. 6.81 μF
- B. 165 μF ✗
- C. 0.681 μF
- D. 68.2 μF

Question 26

Correct

Mark 4.00 out of 4.00

In the centre-tap circuit shown in Figure, the diodes are assumed to be ideal i.e. having zero internal resistance. Find peak inverse voltage *(in volts*). Assume that input AC supply voltage is 230 V (rms).



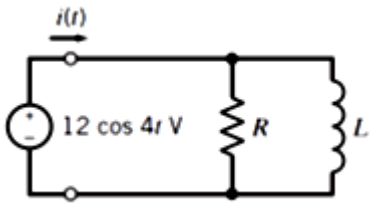
Answer: 65.05 ✓

Question 27

Incorrect

Mark 0.00 out of 4.00

The complex power delivered by the voltage source shown in the figure below is S = 18 + j9 VA. Determine the value of inductance L (*in henrys*).



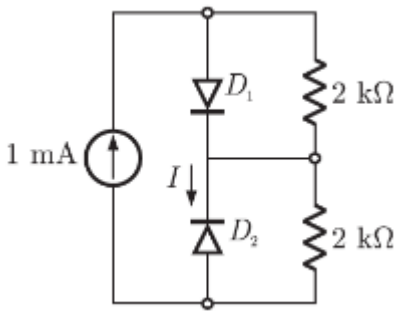
Answer: 4 ✗

Question 28

Correct

Mark 4.00 out of 4.00

Assume that D_1 and D_2 in figure are ideal diodes. The value of current *I (in mA)* through D_2 is



Answer: 0 ✓

Question 29

Correct

Mark 4.00 out of 4.00

In a series R–L circuit the voltage magnitude across the resistance R is 12V and the voltage magnitude across the inductance L is 5V. Find the supply voltage magnitude (*in volts*).

Answer: 13 ✓

Question 30

Correct

Mark 4.00 out of 4.00

The average power delivered (*in watts*) to an impedance (4 - *j*3) Ω by a current 5 cos (100*πt* + 100) A is

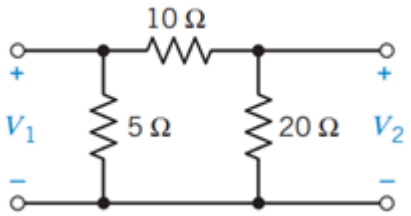
Answer: 50 ✓

Question 31

Incorrect

Mark 0.00 out of 4.00

Find the Y_{22} (*in siemens*) parameters for the two port network of given figure.



Answer: 0.03 ✗

Question 32

Correct

Mark 4.00 out of 4.00

When port 1 of a two-port circuit is short-circuited, $I_1 = 4I_2$ and $V_2 = 0.25I_2$. Find the value of admittance parameter Y_{12} (*in siemens*).

Answer: 16 ✓

Question 33

Correct

Mark 4.00 out of 4.00

In a series RLC circuit, R = 10 Ω, X_L = 20 Ω, X_C = 20 Ω and supply voltage peak value V_m = 100 V. What is the peak value of voltage (*in volts*) across the capacitor?

Answer: 200 ✓

Question 34

Correct

Mark 4.00 out of 4.00

A 240-V rms 60-Hz supply serves a load that is 10 kW (resistive), 15 kVAR (capacitive), and 22 kVAR (inductive). Find the apparent power of the load in kVA.

Answer: 12.21 ✓

Question 35

Correct

Mark 4.00 out of 4.00

In a series RLC circuit, the rms voltage across elements at resonant frequency are V_C = 125 V, V_L = 125 V, and V_R = 40 V. What is the value of source voltage rms magnitude (*in volts*)?

Answer: 40 ✓

Question 36

Correct

Mark 4.00 out of 4.00

What is the upper half power frequency (*in Hz*) for a series RLC circuit that resonates at 2000 Hz and has a bandwidth of 200 Hz?

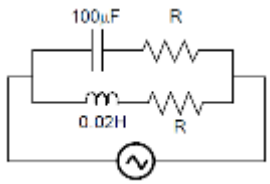
Answer: 2100 ✓

Question 37

Correct

Mark 4.00 out of 4.00

The circuit below is excited by a sinusoidal source. Determine value of R, in Ω, for which the admittance of the circuit becomes a pure conductance at all frequencies.



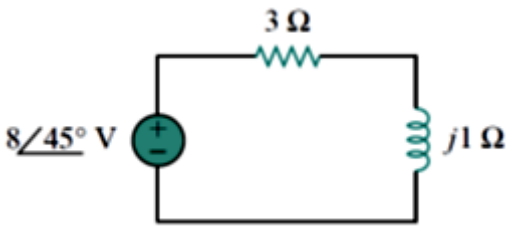
Answer: 14.14 ✓

Question 38

Incorrect

Mark 0.00 out of 4.00

For the circuit shown in figure, calculate the total reactive power, in VAR, of the circuit if the supply voltage rms value is $8 \angle 45^{\circ}$ V .



Answer: 2.53 ✗

Question 39

Correct

Mark 4.00 out of 4.00

Calculate the average power absorbed (*in watts*) by the passive linear network if \(\ v(t)= 80\, cos\, (10t + 20^ {\circ}) V \, and \, i(t)= 15\, sin \, (10t + 60^ {\circ}) A \).

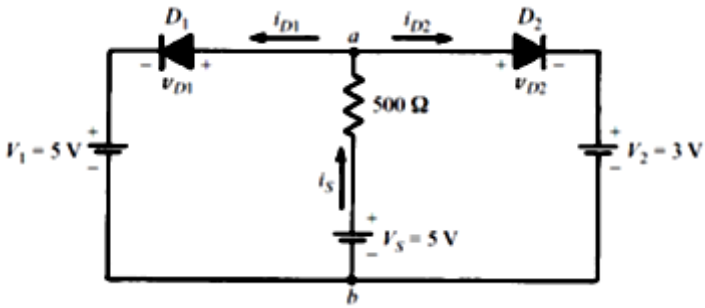
Answer: 385.67 ✓

Question 40

Incorrect

Mark 0.00 out of 4.00

For the circuit shown in figure D_1 and D_2 are ideal diodes. Determine the current i_{D2} (in mA).



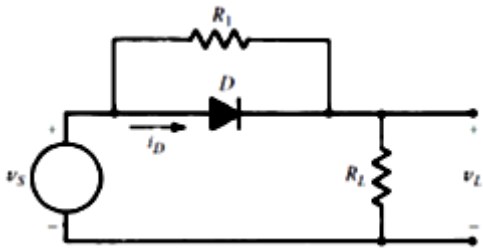
Answer: 0 ✗

Question 41

Correct

Mark 4.00 out of 4.00

The circuit of the given figure adds a dc level (a bias voltage) to a signal whose average value is zero. If v_S is a 10-V square wave (oscillating between +10 V and -10 V) of period T, $R_L = R_1 = 10\ \Omega$, and the diode is ideal, find the average value of v_L *(in volts)*.



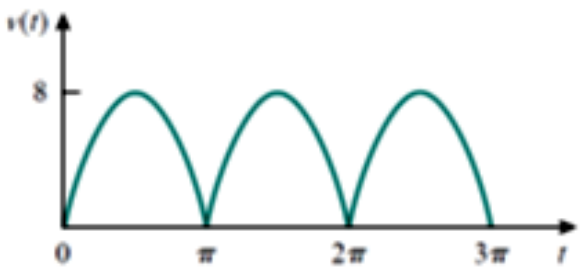
Answer: 2.5 ✓

Question 42

Correct

Mark 4.00 out of 4.00

Find the rms value of the full-wave rectified sine wave in Figure.



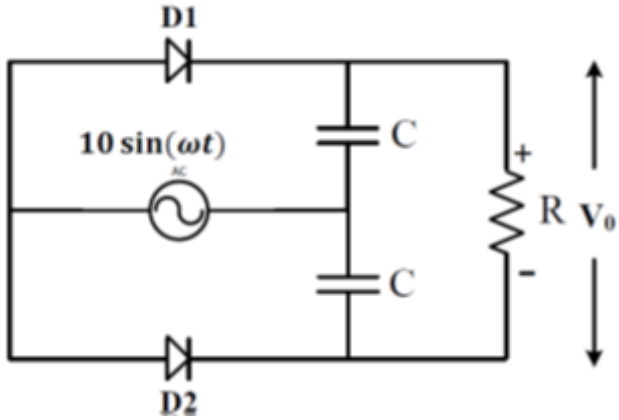
Answer: 5.66 ✓

Question 43

Incorrect

Mark 0.00 out of 4.00

The diodes D1 and D2 in the figure are ideal and the capacitors are identical. The product RC is very large compared to the time period of the AC voltage. Assuming that the diodes do not breakdown in the reverse bias, the output voltage V_0 (in volt) at the steady-state is 10 ✗

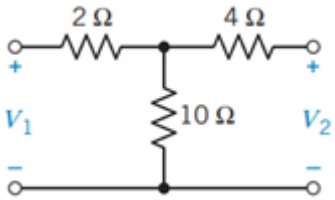


Question 44

Incorrect

Mark 0.00 out of 4.00

Find the transmission parameter D of the circuit shown below.



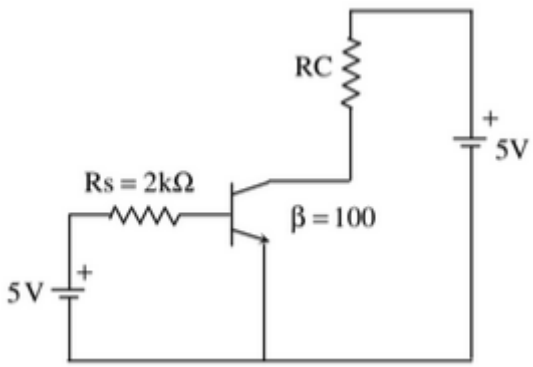
Answer: 1.2 ✗

Question 45

Incorrect

Mark 0.00 out of 4.00

The transistor in the given circuit should always be in active region. Take $V_{CE(sat)}$ = 0.2V; V_{BE} = 0.7V. The maximum value of R_C in Ω which can be used is



Answer: 250 ✗

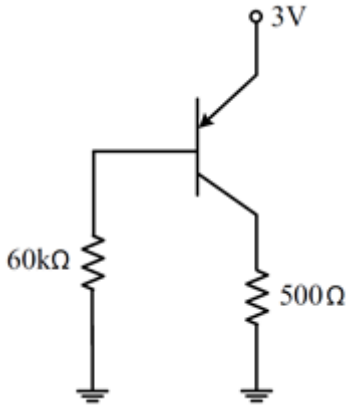
Question 46

Incorrect

Mark 0.00 out of 4.00

In the circuit shown in the figure, the BJT has a current gain (β) of 50. For an emitter – base voltage V_{EB} = 600 mV, the emitter – collector voltage V_{EC} (*in volts*) is

0.25 ✗ .



Question 47

Incorrect

Mark 0.00 out of 4.00

A three-phase motor can be regarded as a balanced Y-load. A three-phase motor draws 5.6 kW when the line voltage is 220 V and the line current is 18.2 A. Determine the power factor of the motor.

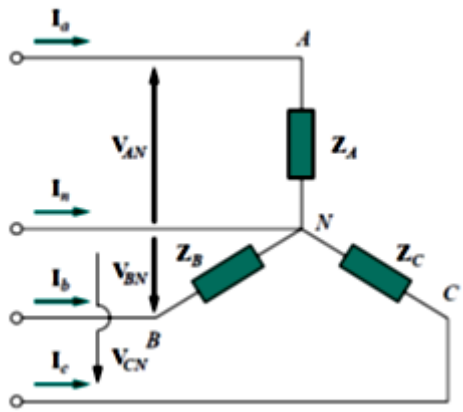
Answer: 0.47 ✗

Question 48

Incorrect

Mark 0.00 out of 4.00

The unbalanced Y-load of shown Figure has balanced voltages of 100 V and the *acb* sequence. Calculate the magnitude of neutral current I_n (*in Amperes*).Take\(Z_A= 15\, \Omega, Z_B=10+j5 \, \Omega , Z_C= 6-j8 \, \Omega. \)



Answer: 21.05 ✗

Question 49

Incorrect

Mark 0.00 out of 4.00

The two-wattmeter method produces wattmeter readings $W1$ = 1560 W and $W2$ = 2100 W, when connected to a balanced delta-connected load. If the rms line voltage is 220 V, calculate the per phase reactive power (*in VAR*) of the load.

Answer: 2000 ✗

Question 50

Incorrect

Mark 0.00 out of 4.00

A balanced Y-connected load with a phase impedance of (8 + *j*6) Ω is connected to a balanced three-phase source with a rms line voltage of 220 V. Calculate the magnitude of the line current I_L (*in Amperes*).

Answer: 22 ✗

◄ Mock Test ELL100 (15 th Aug 2020)

Jump to...

LAB QUIZ-II (22 - Aug - 2020) ►