



Virtual University

About Us

PHY301
Solved Final Term Paper 1

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Year
2017

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

In the Name of Allāh, the Most Gracious, the Most Merciful

Paper Pattern

MCQS 40 each 1 mark
Short 4 each 2 marks
Short 4 each 3 marks
long 4 each 5 marks

Question No : 1 of 43

Marks: 1 (Budgeted Time 1 Min)

Which of the following is not basic SI unit

Answer (Please select your correct option)

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☐ Ampere

☐ Henry

correct

☐ Second

☐ Kelvin

Made by: Waqar Siddhu

Question No : 2 of 43

Marks: 1 (Budgeted Time 1 Min)

An element with 6 protons and 6 neutrons has atomic no. value

Answer (Please select your correct option)

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☐ 6

correct

☐ 12

☐ 18

☐ 8

Made by: Waqar Siddhu

Question No : 3 of 43

Marks: 1 (Budgeted Time 1 Min)

If we connect n inductances in series, total inductance will be

Answer (Please select your correct option)

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- ☐ reciprocal of combined effect of all these inductances
- ☐ sum of individual inductance
- ☐ product of all these
- ☐ sum of first and last inductance

correct

Made by: Waqar Siddhu

Question No : 4 of 43

Marks: 1 (Budgeted Time 1 Min)

With high voltage, the Current can have a Low value when there is

Answer (Please select your correct option)

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- ☐ High resistance
- ☐ Low resistance
- ☐ Constant resistance
- ☐ No resistance

correct

Made by: Waqar Siddhu

Question No : 5 of 43

Marks: 1 (Budgeted Time 1 Min)

Using superposition theorem, for a circuit containing independent sources, any remaining voltage source is

Answer (Please select your correct option)

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- ☐ remain same
- ☐ made zero by replacing them by open circuit
- ☐ made zero by replacing them by capacitor
- ☐ made zero by replacing them by short circuit

correct

Made by: Waqar Siddhu

Question No : 6 of 43

Marks: 1 (Budgeted Time 1 Min)

For proper working of a clamper, time constant of the circuit should be

Answer (Please select your correct option)

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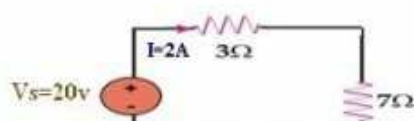
- ☐ Large
- ☐ Small
- ☐ Equal to signal time period
- ☐ Greater than 5 times the signal time -period

Made by: Waqar Siddhu

Question No : 7 of 43

Marks: 1 (Budgeted Time 1 Min)

For the given figure, Power dissipated through voltage source is



Answer (Please select your correct option)

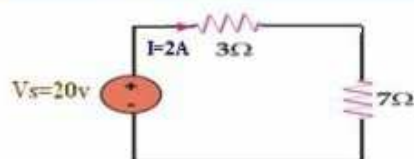
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- ☐ 20w
- ☐ 40w
- ☐ 80w
- ☐ 10w

Made by: Waqar Siddhu

Question No : 7 of 43

Marks: 1 (Budgeted Time 1 Min)



Answer (Please select your correct option)

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- ☐ 20w
- ☐ 40w
- ☐ 80w
- ☐ 10w

Made by: Waqar Siddhu

Question No : 8 of 43

Marks: 1 (Budgeted Time 1 Min)

In source transformation, a current source can be converted into voltage source if

Answer (Please select your correct option)

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☐ current source lies in parallel to a resistance R
correct
☐ current source lies in series to a resistance R

☐ two current sources are in series

☐ current and voltage source lie in parallel

Made by: Waqar Siddhu

Question No : 9 of 43

Marks: 1 (Budgeted Time 1 Min)

In thevenin's theorem , while calculating thevenin's resistance, R_{th}

Answer (Please select your correct option)

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☐ just open circuit current source

☐ Short circuit the current source and open circuit the voltage source

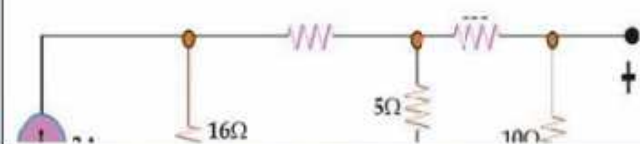
☐ open circuit the current source and short circuit the voltage source
correct
☐ insert the load

Made by: Waqar Siddhu

Question No : 10 of 43

Marks: 1 (Budgeted Time 1 Min)

In order to find R_{th} (Thevenin's Resistance), which one is true from the given below options.



Answer (Please select your correct option)

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☐ open circuit 3A and short circuit 12v
correct
☐ open circuit 12v and short circuit 3A

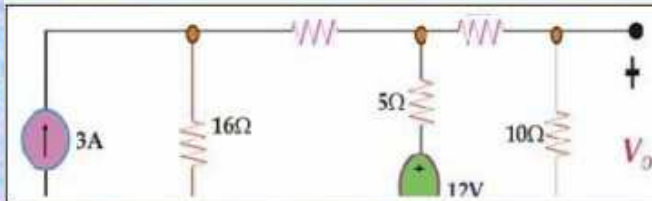
☐ open circuit both sources

☐ just remove 10 ohm

Made by: Waqar Siddhu

Question No : 10 of 43

Marks: 1 (Budgeted Time 1 Min)



Answer (Please select your correct option)

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☐ open circuit 3A and short circuit 12v

correct

☐ open circuit 12v and short circuit 3A

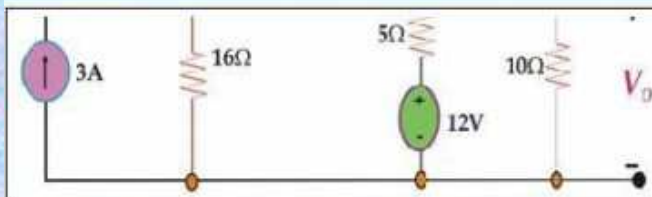
☐ open circuit both sources

☐ just remove 10 ohm

Made by: Waqar Siddhu

Question No : 10 of 43

Marks: 1 (Budgeted Time 1 Min)



Answer (Please select your correct option)

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☐ open circuit 3A and short circuit 12v

correct

☐ open circuit 12v and short circuit 3A

☐ open circuit both sources

☐ just remove 10 ohm

Made by: Waqar Siddhu

Question No : 11 of 43

Marks: 1 (Budgeted Time 1 Min)

In Norton's theorem , while calculating R_n

Answer (Please select your correct option)

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☐ Short circuit the current source and open circuit the voltage source

☐ open circuit the current source and short circuit the voltage source

correct

☐ insert the load

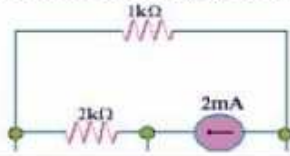
☐ just open circuit current source

Made by: Waqar Siddhu

Question No : 12 of 43

Marks: 1 (Budgeted Time 1 Min)

For the given circuit, if Norton's current I_{Ner} is 5A and Norton's Resistance R_N 10 ohm. To find I_o , the Norton's equivalent circuit will have



Answer (Please select your correct option)

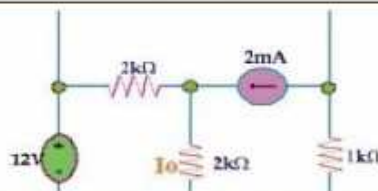
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- ☐ I_{Ner} and R_N in parallel of $1K\Omega$
- ☐ I_{Ner} and R_N in series of $2K\Omega$
- ☐ I_{Ner} and R_N in parallel of $2K\Omega$
- ☐ R_N in parallel of $2K\Omega$

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Question No : 12 of 43

Marks: 1 (Budgeted Time 1 Min)



Answer (Please select your correct option)

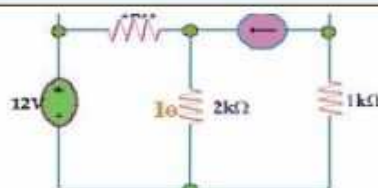
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- ☐ I_{Ner} and R_N in parallel of $1K\Omega$
- ☐ I_{Ner} and R_N in series of $2K\Omega$
- ☐ I_{Ner} and R_N in parallel of $2K\Omega$
- ☐ R_N in parallel of $2K\Omega$

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Question No : 12 of 43

Marks: 1 (Budgeted Time 1 Min)



Answer (Please select your correct option)

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- ☐ I_{Ner} and R_N in parallel of $1K\Omega$
- ☐ I_{Ner} and R_N in series of $2K\Omega$
- ☐ I_{Ner} and R_N in parallel of $2K\Omega$
- ☐ R_N in parallel of $2K\Omega$

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Question No : 13 of 43

Marks: 1 (Budgeted Time 1 Min)

Thermal ionization in semiconductor results, creating of

Answer (Please select your correct option)

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- ☐ only free electrons
- ☐ only holes
- ☐ both free electrons and holes
- ☐ nothing

correct

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Question No : 14 of 43

Marks: 1 (Budgeted Time 1 Min)

For a P-N junction under reverse bias

Answer (Please select your correct option)

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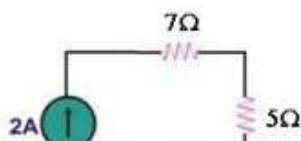
- ☐ more forward current flows
- ☐ no forward current flows
- ☐ no reverse current flows
- ☐ infinite reverse current flows

correct

Made by: Waqar Siddhu

Question No : 15 of 43

Marks: 1 (Budgeted Time 1 Min)

Current flowing through 5Ω resistance will be

Answer (Please select your correct option)

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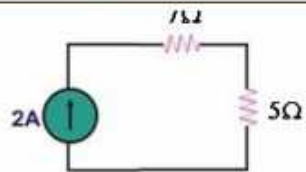
- ☐ 1.1A
- ☐ 2A
- ☐ 10A
- ☐ 14A

correct

Made by: Waqar Siddhu

Question No : 15 of 43

Marks: 1 (Budgeted Time 1 Min)



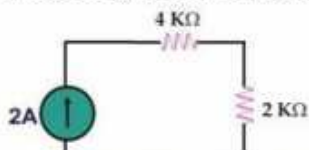
Answer (Please select your correct option)

WWW.VirtualAcademyLive.com☐ 1.1A☐ 2A☐ 10A☐ 14A**Made by: Waqar Siddhu**

Question No : 16 of 43

Marks: 1 (Budgeted Time 1 Min)

In the given fig. Current flowing through 4kΩ resistance will be

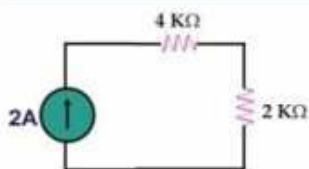


Answer (Please select your correct option)

WWW.VirtualAcademyLive.com☐ 8A☐ 2A**correct**☐ 4A☐ 0.6A**Made by: Waqar Siddhu**

Question No : 16 of 43

Marks: 1 (Budgeted Time 1 Min)



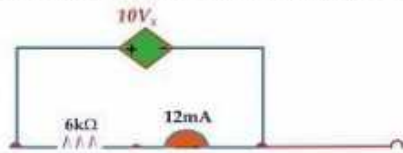
Answer (Please select your correct option)

WWW.VirtualAcademyLive.com☐ 8A☐ 2A☐ 4A☐ 0.6A**Made by: Waqar Siddhu**

Question No : 17 of 43

Marks: 1 (Budgeted Time 1 Min)

In the given circuit, the value of dependent voltage source is



Answer (Please select your correct option)

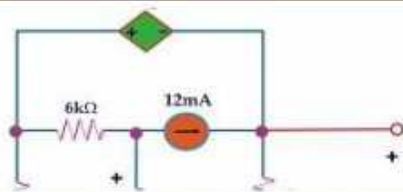
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☐ Vx☐ Vocorrect☐ 10Vx☐ 12mA

Made by: Waqar Siddhu

Question No : 17 of 43

Marks: 1 (Budgeted Time 1 Min)



Answer (Please select your correct option)

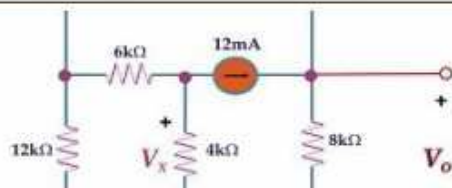
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☐ Vx☐ Vo☐ 10Vx☐ 12mA

Made by: Waqar Siddhu

Question No : 17 of 43

Marks: 1 (Budgeted Time 1 Min)



Answer (Please select your correct option)

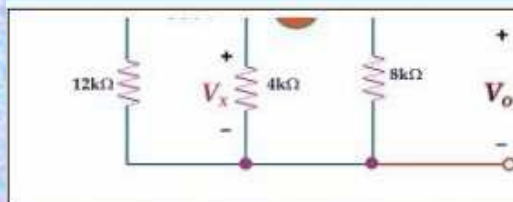
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☐ Vx☐ Vo☐ 10Vx☐ 12mA

Made by: Waqar Siddhu

Question No : 17 of 43

Marks: 1 (Budgeted Time 1 Min)



Answer (Please select your correct option)

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☐ Vx☐ Vo☐ 10Vx☐ 12mA

Made by: Waqar Siddhu

Question No : 18 of 43

Marks: 1 (Budgeted Time 1 Min)

In a loop analysis , which of the following is true?

Answer (Please select your correct option)

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☐ No. of equations to be written is equal to No. of loopscorrect☐ No. of equations to be written is equal to 1 minus No. of loops☐ No. of equations to be written is equal to twice the No. of loops☐ No. of equations to be written is equal to half the No. of loops

Made by: Waqar Siddhu

Question No : 19 of 43

Marks: 1 (Budgeted Time 1 Min)

When ideal diode acting as short circuit

Answer (Please select your correct option)

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☐ V is maximum☐ V is half of applied voltage☐ V=0correct☐ no current flows

Made by: Waqar Siddhu

Question No : 20 of 43

Marks: 1 (Budgeted Time 1 Min)

AC or dynamic resistance of diode is due to

Answer (Please select your correct option)

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- ☐ changing value V_D and I_D of diode by applying DC voltage
- ☐ fixed value V_D and I_D of diode by applying DC voltage
- ☐ changing value V_D and I_D of diode by applying varying input signal
- ☐ fixed resistance of diode by applying AC voltage

Made by: Waqar Siddhu

Question No : 21 of 43

Marks: 1 (Budgeted Time 1 Min)

The primary and secondary winding of transformer are

Answer (Please select your correct option)

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- ☐ physically touched
- ☐ physically isolated
- ☐ touched with conductor
- ☐ largely separated

correct

Made by: Waqar Siddhu

Question No : 22 of 43

Marks: 1 (Budgeted Time 1 Min)

For secondary turns of 10 and primary turns of 20, turn ratio is

Answer (Please select your correct option)

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- ☐ 20:20
- ☐ 10:20
- ☐ 10:10
- ☐ 20:10

correct

Made by: Waqar Siddhu

Question No : 23 of 43

Marks: 1 (Budgeted Time 1 Min)

When the turn ratio of a transformer is 5 and primary ac voltage is 10v, the secondary voltage is

Answer (Please select your correct option)

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☐ 100v

☐ 25v

☐ 50v

☐ 2v

correct

Made by: Waqar Siddhu

Question No : 24 of 43

Marks: 1 (Budgeted Time 1 Min)

which relation is true for transformer primary and secondary power?

Answer (Please select your correct option)

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☐ $V_1V_2=I_1I_2$

☐ $V_2I_2=V_1I_1$

☐ $V_2I_1=V_1I_2$

☐ $I_2I_1=V_2V_1$

Made by: Waqar Siddhu

Question No : 25 of 43

Marks: 1 (Budgeted Time 1 Min)

The PIV of a half wave rectifier is

Answer (Please select your correct option)

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☐ $V_{(peak)}$

correct

☐ $2V_m$

☐ $V_m/2$

☐ $3V_m$

Made by: Waqar Siddhu

Question No : 26 of 43

Marks: 1 (Budgeted Time 1 Min)

As diode conducts the electrical current only in one direction, hence it is consider as a

Answer (Please select your correct option)

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☐ Switch

correct

☐ Amplifier

☐ Capacitor

☐ Inductor

Made by: Waqar Siddhu

Question No : 27 of 43

Marks: 1 (Budgeted Time 1 Min)

Which stage of a power supply uses as a Zener as the main component? Select one of the given choice.

Answer (Please select your correct option)

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☐ Rectifier

☐ Voltage divider

☐ Regulator

correct

☐ Filter

Made by: Waqar Siddhu

Question No : 28 of 43

Marks: 1 (Budgeted Time 1 Min)

Leakage current of a junction diode

Answer (Please select your correct option)

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☐ Decrease with more temperature

correct

☐ Is due to majority carriers

☐ Depends on the method of its fabrication

☐ Is the range of mA or micro Ampere

Made by: Waqar Siddhu

Question No : 29 of 43

Marks: 1 (Budgeted Time 1 Min)

In a properly biased NPN transistor most of the electrons from the emitter

Answer (Please select your correct option)

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- ☐ Recombine with holes in base
- ☐ Recombine with emitter itself
- ☐ Pass through the base to the collector
- ☐ Are stopped by the junction barrier

correct

Made by: Waqar Siddhu

Question No : 30 of 43

Marks: 1 (Budgeted Time 1 Min)

The current flow across the base-emitter junction of a p-n-p transistor consists of

Answer (Please select your correct option)

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- ☐ Mainly electrons
- ☐ Equal numbers of holes and electrons
- ☐ Mainly holes
- ☐ The leakage current

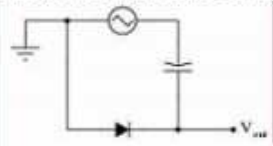
correct

Made by: Waqar Siddhu

Question No : 31 of 43

Marks: 2 (Budgeted Time 4 Min)

Draw the output waveform shape for this circuit, assuming an ideal diode (no forward voltage drop and no reverse leakage):



Answer (Please click here to Add Answer)

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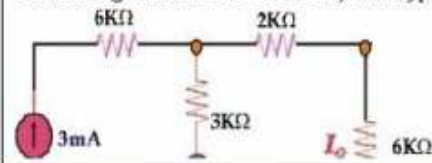


Made by: Waqar Siddhu

Question No : 32 of 43

Marks: 2 (Budgeted Time 4 Min)

Considering the Norton's theorem, what type of changes you will do in the circuit to find Norton's Resistance R_N . Draw the circuit only.



Answer (Please [click here](#) to Add Answer)

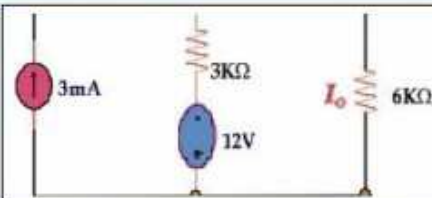
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Question No : 32 of 43

Marks: 2 (Budgeted Time 4 Min)



Answer (Please [click here](#) to Add Answer)

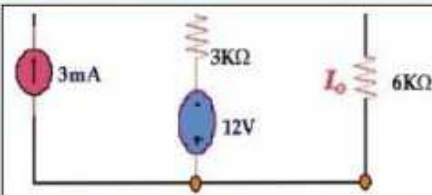
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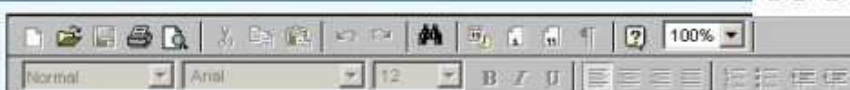
Question No : 32 of 43

Marks: 2 (Budgeted Time 4 Min)



Answer (Please [click here](#) to Add Answer)

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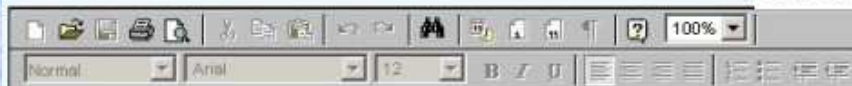
Question No : 33 of 43

Marks: 2 (Budgeted Time 4 Min)

State Kirchhoff's voltage law (KVL).

Answer (Please [click here](#) to Add Answer)

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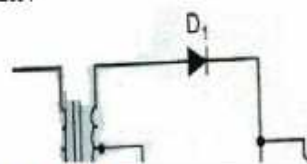


Made by: Waqar Siddhu

Question No : 34 of 43

Marks: 2 (Budgeted Time 4 Min)

What type of changes you will do in the circuit to make it Negative Full wave rectifier?



Answer (Please [click here](#) to Add Answer)

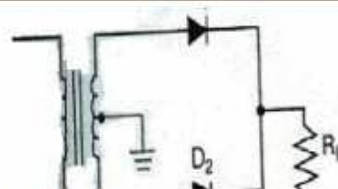
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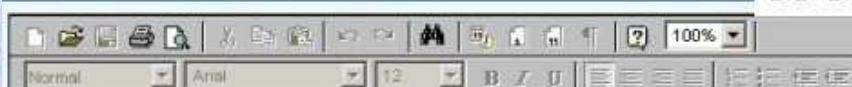
Question No : 34 of 43

Marks: 2 (Budgeted Time 4 Min)



Answer (Please [click here](#) to Add Answer)

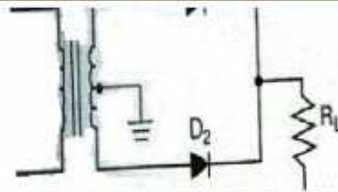
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Question No : 34 of 43

Marks: 2 (Budgeted Time 4 Min)



Answer (Please [click here](#) to Add Answer)

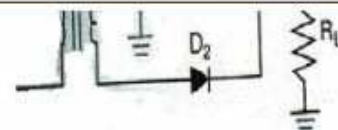
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Question No : 34 of 43

Marks: 2 (Budgeted Time 4 Min)



Answer (Please [click here](#) to Add Answer)

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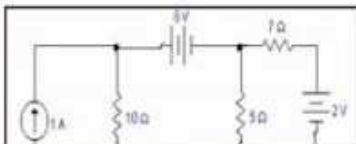


Made by: Waqar Siddhu

Question No : 35 of 43

Marks: 3 (Budgeted Time 6 Min)

Label the given circuit for node, reference node and super node.



Answer (Please [click here](#) to Add Answer)

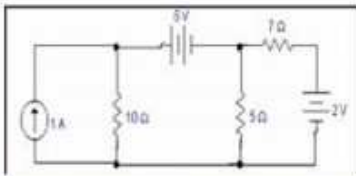
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Made by: Waqar Siddhu

Question No : 35 of 43

Marks: 3 (Budgeted Time 6 Min)



Answer (Please [click here](#) to Add Answer)

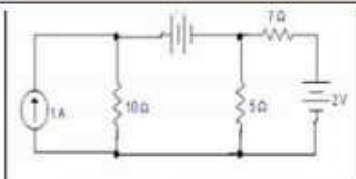
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Made by: Waqar Siddhu

Question No : 35 of 43

Marks: 3 (Budgeted Time 6 Min)



Answer (Please [click here](#) to Add Answer)

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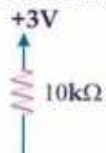


Made by: Waqar Siddhu

Question No : 36 of 43

Marks: 3 (Budgeted Time 6 Min)

For the circuit shown in the figure below using ideal diode, find the value of the indicated voltage and current.



Answer (Please [click here](#) to Add Answer)

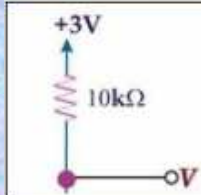
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Question No : 36 of 43

Marks: 3 (Budgeted Time 6 Min)



Answer (Please [click here](#) to Add Answer)

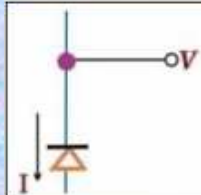
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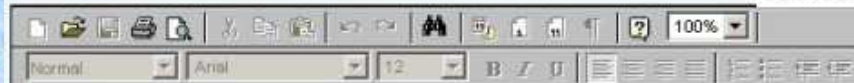
Question No : 36 of 43

Marks: 3 (Budgeted Time 6 Min)



Answer (Please [click here](#) to Add Answer)

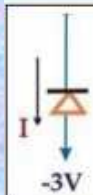
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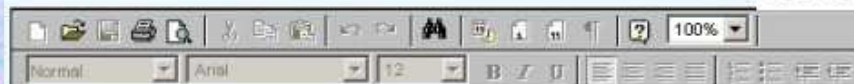
Question No : 36 of 43

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Answer (Please [click here](#) to Add Answer)

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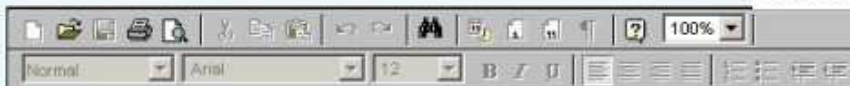
Question No : 37 of 43

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Consider a diode with $n = 2$ biased at 1mA . Find the change in current as a result of changing the voltage by -20mV using Small Signal Model. Where diode small signal conductance V_T is 25mho

Answer (Please [click here](#) to Add Answer)

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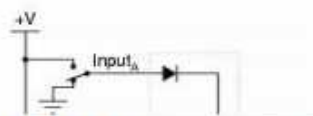


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Question No : 38 of 43

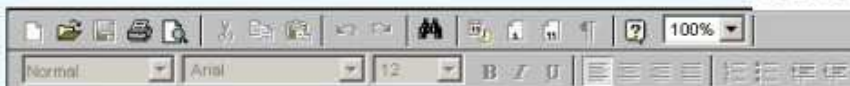
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Crude logic gates circuits may be constructed out of nothing but diodes and resistors. Take for example this logic gate circuit:



Answer (Please [click here](#) to Add Answer)

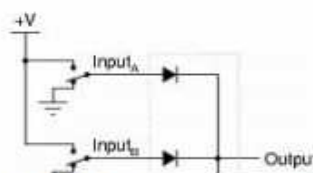
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Question No : 38 of 43

Marks: 3 (Budgeted Time 6 Min)



Answer (Please [click here](#) to Add Answer)

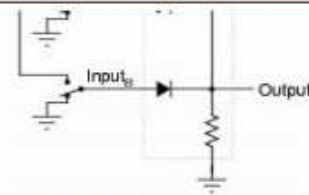
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Question No : 38 of 43

Marks: 3 (Budgeted Time 6 Min)



Answer ([Please click here to Add Answer](#))

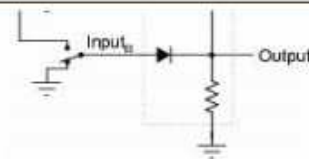
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Identify what type of logic function is represented by this gate circuit

Answer ([Please click here to Add Answer](#))

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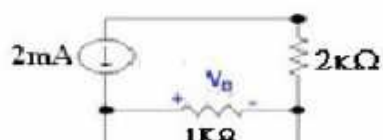


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Question No : 39 of 43

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Label the circuit properly. Use any technique to find out the V_o for the given circuit.



Answer ([Please click here to Add Answer](#))

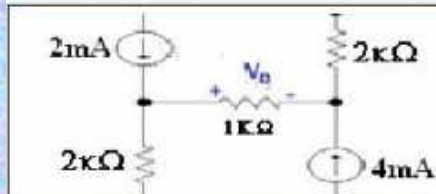
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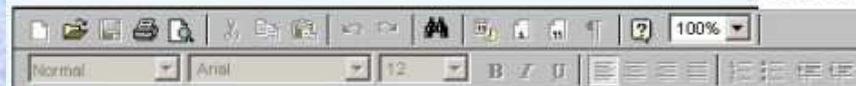
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Question No : 39 of 43

Marks: 5 (Budgeted Time 10 Min)

Answer (Please [click here](#) to Add Answer)

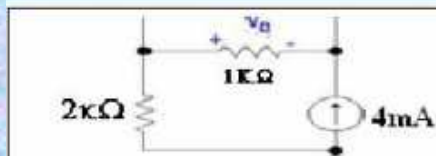
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Question No : 39 of 43

Marks: 5 (Budgeted Time 10 Min)

Answer (Please [click here](#) to Add Answer)

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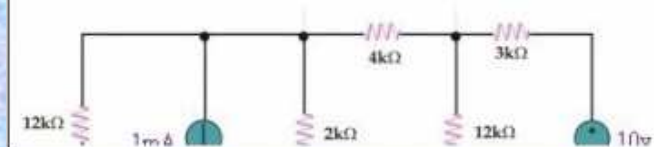


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Question No : 40 of 43

Marks: 5 (Budgeted Time 10 Min)

Using the **Source transformation method**, how will you convert 10v voltage source into current source and 1mA into voltage source in the following circuit? Draw diagrams of converted circuit.

Answer (Please [click here](#) to Add Answer)

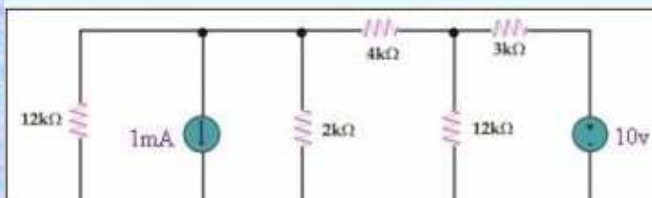
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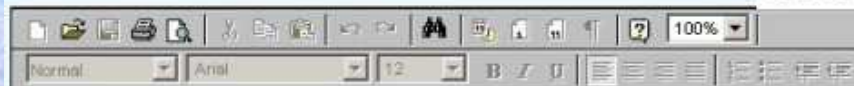
Question No : 40 of 43

Marks: 5 (Budgeted Time 10 Min)



Answer (Please [click here](#) to Add Answer)

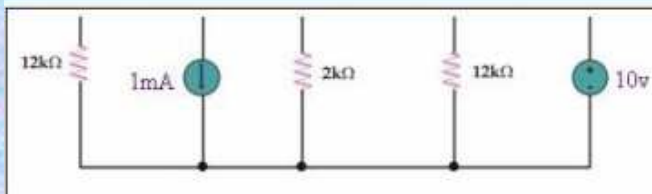
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Question No : 40 of 43

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Answer (Please [click here](#) to Add Answer)

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Question No : 41 of 43

Marks: 5 (Budgeted Time 10 Min)

Given below are two figures (a) and (b) having Diode, which diode is forward biased or reversed biased? tell reason.



Answer (Please [click here](#) to Add Answer)

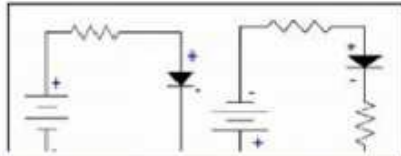
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Question No : 41 of 43

Marks: 5 (Budgeted Time 10 Min)



Answer (Please [click here](#) to Add Answer)

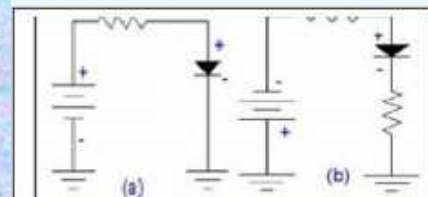
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Question No : 41 of 43

Marks: 5 (Budgeted Time 10 Min)



Answer (Please [click here](#) to Add Answer)

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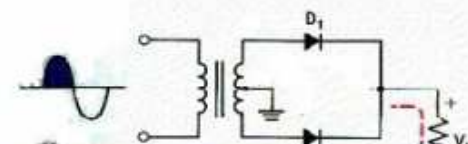


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Question No : 42 of 43

Marks: 5 (Budgeted Time 10 Min)

Describe the basic circuit operation of Full wave rectifier for both input signals, shown at left side of given fig.



Answer (Please [click here](#) to Add Answer)

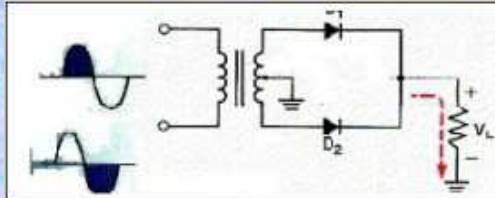
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Answer (Please [click here](#) to Add Answer)

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Question No : 43 of 43

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Write a brief description about LEDs.

Answer (Please [click here](#) to Add Answer)

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