



Virtual University

About Us

PHY301  
Solved Final Term Paper 2

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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 correct statement.

Answer ( Please select your correct option )

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- ☐ Proton is 1840 times heavier than electron.
- ☐ The total number of electrons in the outer rings must equal to the number of protons in the nucleus in a neutral atom
- ☐ The electrons in an atom are bound to the protons in the nucleus by the electromagnetic force
- ☐ As a whole an atom is not neutral particle

correct

Made by: Waqar Siddhu

Question No : 2 of 43

Marks: 1 (Budgeted Time 1 Min)

How many electron charges are there in the practical unit of one coulomb.

Answer ( Please select your correct option )

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- ☐  $4.5 \times 10^6$
- ☐  $6.5 \times 10^{16}$
- ☐  $6.25 \times 10^{18}$
- ☐  $1.9 \times 10^{19}$

correct

Made by: Waqar Siddhu



Question No : 3 of 43

Marks: 1 (Budgeted Time 1 Min)

If magnitude of the current is controlled by input current the source is called

Answer ( Please select your correct option )

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☐

Current controlled current source

correct

☐

Current controlled voltage source

☐

Voltage controlled voltage source

☐

Voltage controlled current source

Made by: Waqar Siddhu

Question No : 4 of 43

Marks: 1 (Budgeted Time 1 Min)

Current divider is used when

Answer ( Please select your correct option )

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☐

Two or more resistances are in series of a voltage source

☐

Two or more resistances are in parallel of a voltage source

☐

Two or more resistances are in series of a current source

☐

Two or more resistances are in parallel of a current source

correct

Made by: Waqar Siddhu

Question No : 5 of 43

Marks: 1 (Budgeted Time 1 Min)

Leakage current of semiconductor diode is caused by

Answer ( Please select your correct option )

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☐

chemical energy

☐

heat energy

☐

barrier voltage

☐

doping impurity

correct

Made by: Waqar Siddhu



Question No : 6 of 43

Marks: 1 (Budgeted Time 1 Min)

Distance or link between two nodes is called

Answer ( Please select your correct option )

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☐ Branchcorrect☐ Loop☐ node☐ super mesh

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Question No : 7 of 43

Marks: 1 (Budgeted Time 1 Min)

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

Answer ( Please select your correct option )

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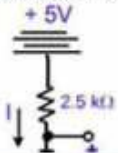
☐ replaced by short circuit☐ made zero by replacing them by open circuitcorrect☐ replaced by close circuit☐ replaced by capacitor

Made by: Waqar Siddhu

Question No : 8 of 43

Marks: 1 (Budgeted Time 1 Min)

Considering diode to be ideal , current flowing through resistance will be



Answer ( Please select your correct option )

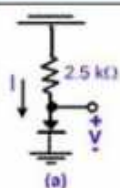
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☐ 5mA☐ 2mA☐ zero ampere☐ 2.5mA

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Question No : 8 of 43

Marks: 1 (Budgeted Time 1 Min)



Answer ( Please select your correct option )

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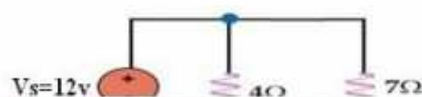
- ☐ 5mA
- ☐ 2mA
- ☐ zero ampere
- ☐ 2.5mA

Made by: Waqar Siddhu

Question No : 9 of 43

Marks: 1 (Budgeted Time 1 Min)

Across which resistance more voltage is dropped



Answer ( Please select your correct option )

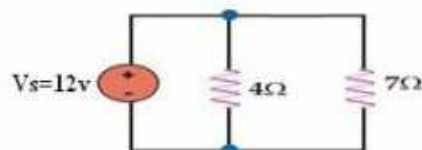
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- ☐ 4Ω
- ☐ 7Ω
- ☐ same across both
- ☐ no voltage drop

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Question No : 9 of 43

Marks: 1 (Budgeted Time 1 Min)



Answer ( Please select your correct option )

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- ☐ 4Ω
- ☐ 7Ω
- ☐ same across both
- ☐ no voltage drop

correct

Made by: Waqar Siddhu



Question No : 10 of 43

Marks: 1 (Budgeted Time 1 Min)

Through which resistance least current will flow



Answer ( Please select your correct option )

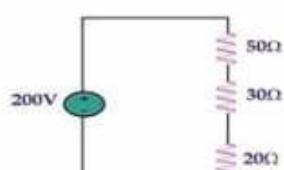
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☐ 50Ω☐ 30Ω☐ 20Ω☐ same through all resistance

Made by: Waqar Siddhu

Question No : 10 of 43

Marks: 1 (Budgeted Time 1 Min)



Answer ( Please select your correct option )

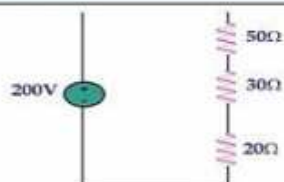
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☐ 50Ω☐ 30Ω☐ 20Ω☐ same through all resistance

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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☐ 50Ω☐ 30Ω☐ 20Ω☐ same through all resistance

correct

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Question No : 11 of 43

Marks: 1 (Budgeted Time 1 Min)

Which of the following statement is not correct?

Answer ( Please select your correct option )

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- ☐ An open circuit has zero current.
- ☐ A short circuit has excessive current.
- ☐ An open circuit and a short circuit have opposite effects on resistance and current.
- ☐ A closed circuit do not allow flow of current

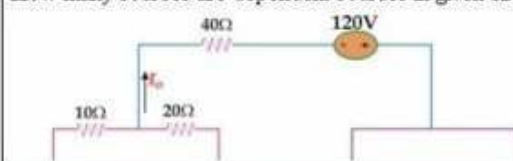
correct

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Question No : 12 of 43

Marks: 1 (Budgeted Time 1 Min)

How many sources are dependent sources in given circuit?



Answer ( Please select your correct option )

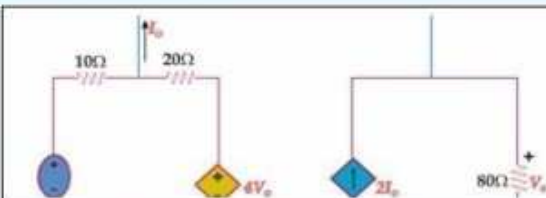
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- ☐ 3
- ☐ 2
- ☐ 4
- ☐ 1

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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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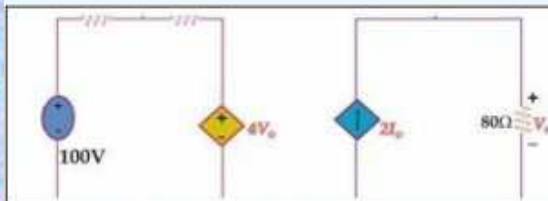
- ☐ 3
- ☐ 2
- ☐ 4
- ☐ 1

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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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3

2

correct

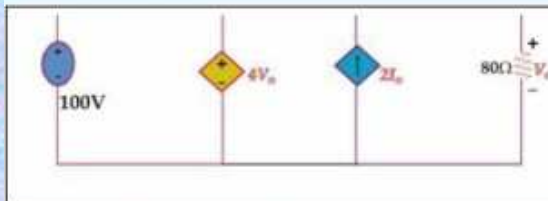
4

1

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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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3

2

4

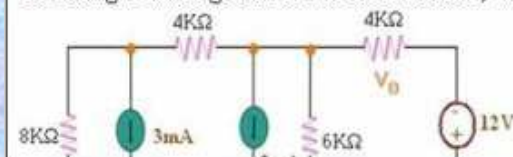
1

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Question No : 13 of 43

Marks: 1 (Budgeted Time 1 Min)

Converting 12v voltage source into current source, value of converted current source will be



Answer ( Please select your correct option )

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3mA

2mA

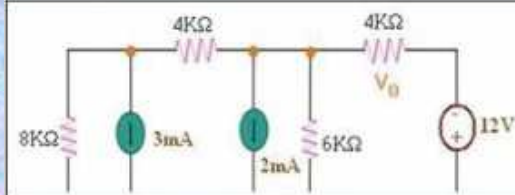
48mA

1mA

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Question No : 13 of 43

Marks: 1 (Budgeted Time 1 Min)



Answer ( Please select your correct option )

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☐ 3mA

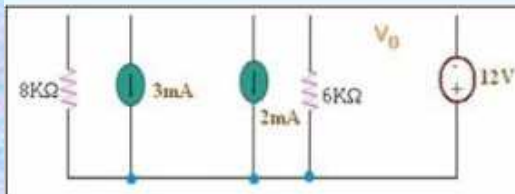
correct

☐ 2mA☐ 48mA☐ 1mA

Made by: Waqar Siddhu

Question No : 13 of 43

Marks: 1 (Budgeted Time 1 Min)



Answer ( Please select your correct option )

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☐ 3mA☐ 2mA☐ 48mA☐ 1mA

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Question No : 14 of 43

Marks: 1 (Budgeted Time 1 Min)

For a circuit containing dependent voltage source, if Thevenin's voltage  $V_{th}$  is 10v and  $I_{sc}$  is 2A, Thevenin's Resistance  $R_{th}$  will be

Answer ( Please select your correct option )

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☐ 10Ω☐ 20Ω☐ 5Ω☐ 0.5Ω

Made by: Waqar Siddhu



Question No : 15 of 43

Marks: 1 (Budgeted Time 1 Min)

For a circuit containing dependent voltage source, if Thevenin's voltage  $V_{th}$  is 15v and  $I_{sc}$  is 5A, Thevenin's Resistance  $R_{th}$  will be

Answer ( Please select your correct option )

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☐ 6Ω

☐ 3Ω

☐ 75Ω

☐ 5Ω

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Question No : 16 of 43

Marks: 1 (Budgeted Time 1 Min)

In a Norton's theorem ,norton's current  $I_{nor}$  is calculated

Answer ( Please select your correct option )

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☐ at open terminals of the open circuit

☐ by short circuiting the open terminal of the circuit

☐ across the load

☐ any where

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Question No : 17 of 43

Marks: 1 (Budgeted Time 1 Min)

Semiconductor element in pure form is called

Answer ( Please select your correct option )

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☐ extrinsic

☐ P type

☐ intrinsic

☐ N type

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Question No : 18 of 43

Marks: 1 (Budgeted Time 1 Min)

For reverse biased condition of P-N junction, which of the following condition is applied?

Answer ( Please select your correct option )

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- ☐ -Ve polarity to both N electrode and P electrode
- ☐ +Ve polarity to both N electrode and P electrode
- ☐ +Ve polarity to N electrode and -Ve polarity to P electrode
- ☐ +Ve polarity to P electrode and -Ve polarity to N electrode

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Question No : 19 of 43

Marks: 1 (Budgeted Time 1 Min)

The characteristics of ideal diode when forward biased are

Answer ( Please select your correct option )

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- ☐ diode will have maximum current flow
- ☐ diode will have no voltage drop across its terminals
- ☐ all of these
- ☐ Diode will have minimum resistance

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Question No : 20 of 43

Marks: 1 (Budgeted Time 1 Min)

A transformer is used for

Answer ( Please select your correct option )

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- ☐ dc voltage
- ☐ ac voltage
- ☐ both ac and dc voltage
- ☐ none of these

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Question No : 21 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

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Question No : 22 of 43

Marks: 1 (Budgeted Time 1 Min)

The depletion region of a semiconductor diode is due to

Answer ( Please select your correct option )

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☐ Absence of current carriers

☐ Reverse biasing

☐ Forward biasing

☐ Crystal doping

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Question No : 23 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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☐  $V_{(2\phi)}$

☐  $2V_m$

☐  $V_m/2$

☐  $3V_m$

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Question No : 24 of 43

Marks: 1 (Budgeted Time 1 Min)

The leakage current of semiconductor diode is caused by

Answer ( Please select your correct option )

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- ☐ Chemical energy
- ☐ Barrier voltage
- ☐ Heat energy
- ☐ Doping impurity

Made by: Waqar Siddhu

Question No : 25 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
- ☐ Amplifier
- ☐ Capacitor
- ☐ Inductor

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Question No : 26 of 43

Marks: 1 (Budgeted Time 1 Min)

A general purpose diode is more likely to suffer Avalanche breakdown rather than Zener breakdown because

Answer ( Please select your correct option )

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- ☐ Its leakage current is small
- ☐ It has weak covalent bonding
- ☐ It is lightly doped
- ☐ It has low reverse resistance

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Question No : 27 of 43

Marks: 1 (Budgeted Time 1 Min)

The base region of a p-n-p transistor is

Answer ( Please select your correct option )

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- ☐ Very thin and heavily doped with holes
- ☐ Very thin and heavily doped with electrons
- ☐ Very thin and lightly doped with holes
- ☐ Very thin and lightly doped with electrons

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Question No : 28 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

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Question No : 29 of 43

Marks: 1 (Budgeted Time 1 Min)

In normal /active operation, the junctions of a p-n-p transistor are:

Answer ( Please select your correct option )

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- ☐ Both forward biased
- ☐ Base-emitter forward biased and base collector reverse biased
- ☐ Both reverse biased
- ☐ Base-collector forward biased and base-emitter reverse biased

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Question No : 30 of 43

Marks: 1 (Budgeted Time 1 Min)

For a transistor, if value of  $\alpha$  is 0.9, and the emitter current ( $I_E$ ) is 4mA, then

Answer ( Please select your correct option )

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- ☐ The base current is approximately 4.4mA
- ☐ The collector current ( $I_C$ ) is approximately 3.6mA
- ☐ The collector current is approximately 4.4mA
- ☐ The base current is approximately 3.6mA

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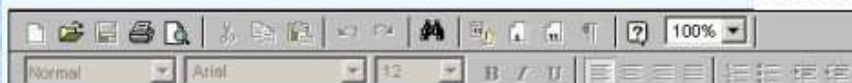
Question No : 31 of 43

Marks: 2 (Budgeted Time 4 Min)

What will happen when  
(I) two like charges come close  
(II) two opposite charges come close

Answer ( Please click here to Add Answer )

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Question No : 32 of 43

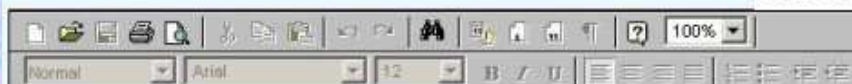
Marks: 2 (Budgeted Time 4 Min)

Mention the P- type and n -type for Diode symbol given below.



Answer ( Please click here to Add Answer )

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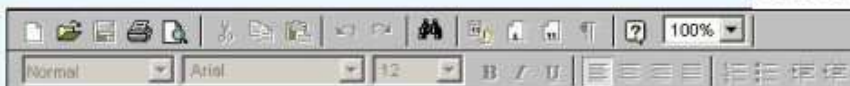
Question No : 33 of 43

Marks: 2 (Budgeted Time 4 Min)

Write the formula to calculate PIV for half wave rectifier.

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

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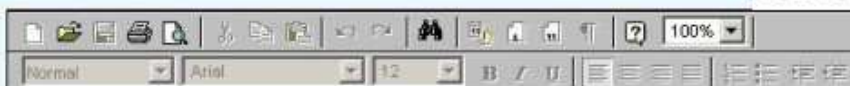
Question No : 34 of 43

Marks: 2 (Budgeted Time 4 Min)

What is the relationship between the polarity of the voltage applied to the PNP transistor and that applied to the NPN transistor?

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

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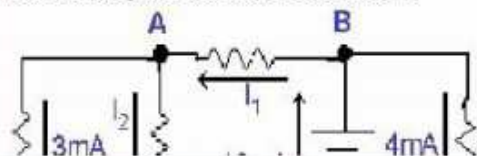


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Question No : 35 of 43

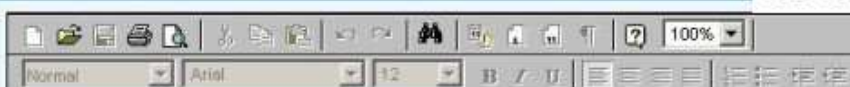
Marks: 3 (Budgeted Time 6 Min)

Write KCL equation for node A and node B.



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

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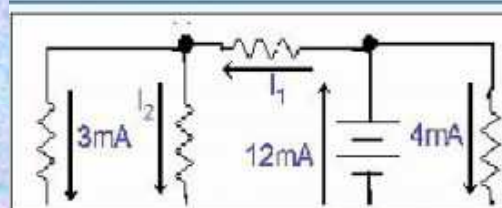


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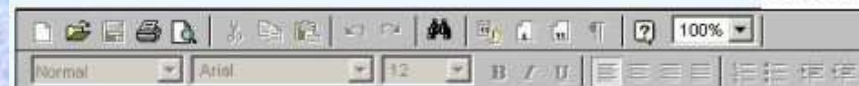
Question No : 35 of 43

Marks: 3 (Budgeted Time 6 Min)



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

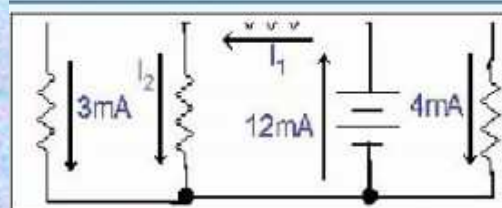
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Question No : 35 of 43

Marks: 3 (Budgeted Time 6 Min)



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

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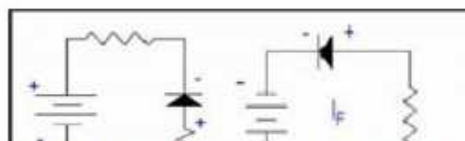


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Question No : 36 of 43

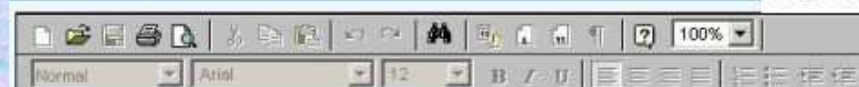
Marks: 3 (Budgeted Time 6 Min)

Given below are two figures (a) and (b) having Diode, In which diode current will flow and will not flow? Give its reason.



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

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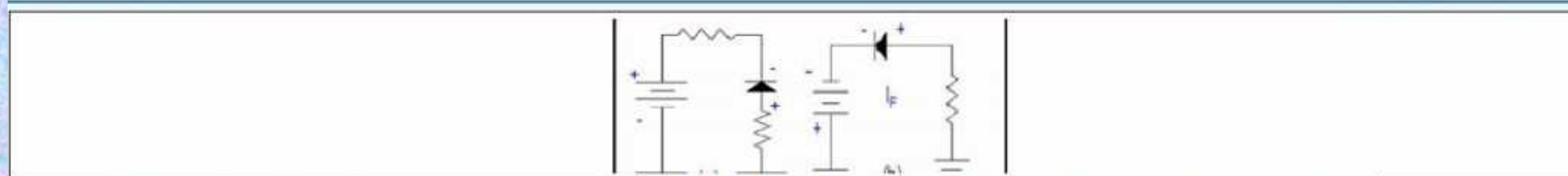


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Question No : 36 of 43

Marks: 3 (Budgeted Time 6 Min)



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

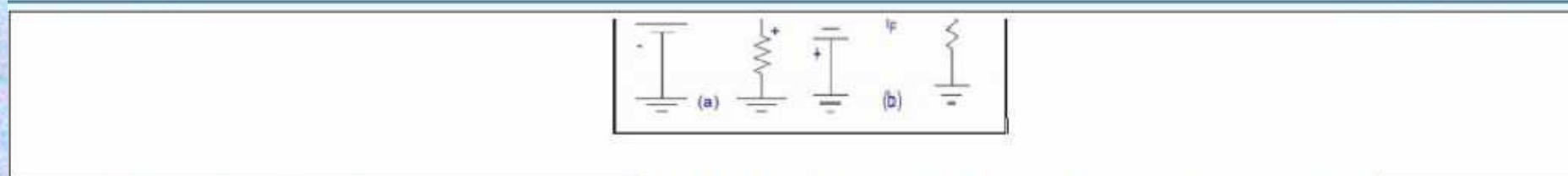
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Normal Arial 12 B I U

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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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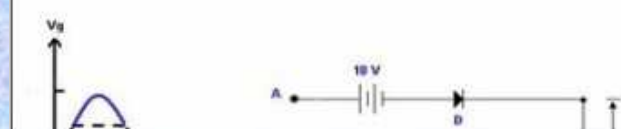
Normal Arial 12 B I U

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Question No : 37 of 43

Marks: 3 (Budgeted Time 6 Min)

Tell the name of circuit in fig (b) and how it response for input signal of fig (a)?



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

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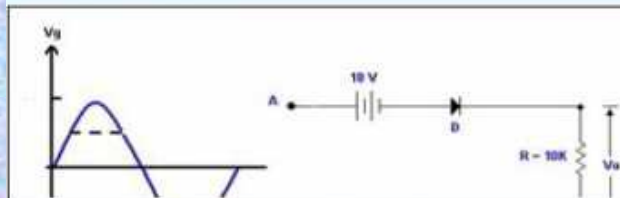
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Question No : 37 of 43

Marks: 3 (Budgeted Time 6 Min)



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

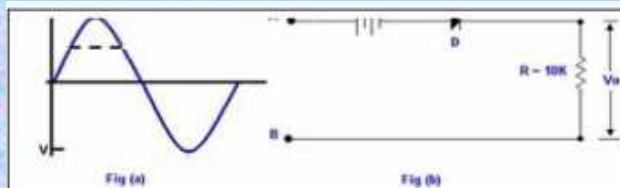
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Question No : 37 of 43

Marks: 3 (Budgeted Time 6 Min)



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

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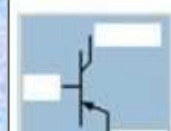


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Question No : 38 of 43

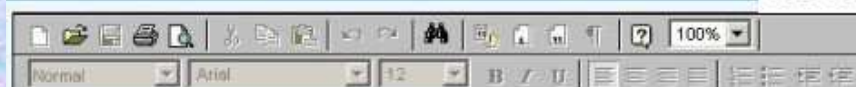
Marks: 3 (Budgeted Time 6 Min)

Label the given diagram for transistor symbol and write its type as well.



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

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Question No : 39 of 43

Marks: 5 (Budgeted Time 10 Min)

For the circuit shown, find  $I_E$  &  $R_C$



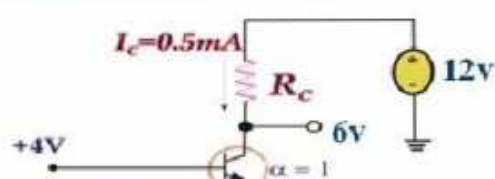
Answer ( Please [click here](#) to Add Answer )

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Question No : 39 of 43

Marks: 5 (Budgeted Time 10 Min)



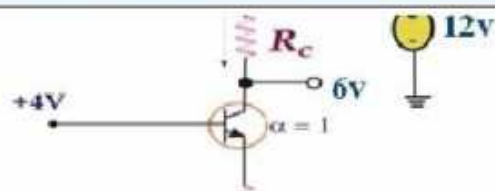
Answer ( Please [click here](#) to Add Answer )

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Question No : 39 of 43

Marks: 5 (Budgeted Time 10 Min)



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

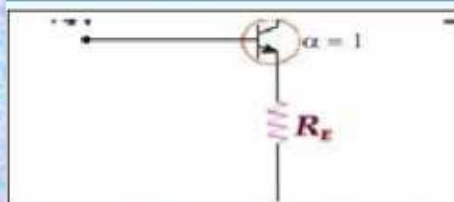
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Question No : 39 of 43

Marks: 5 (Budgeted Time 10 Min)



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Question No : 39 of 43

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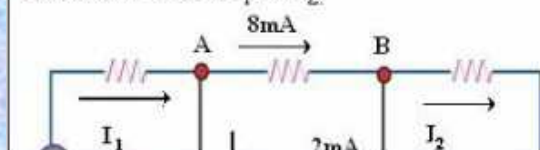


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Question No : 40 of 43

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Calculate the values of  $I_1$  and  $I_2$



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

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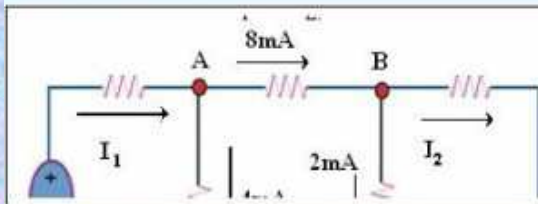


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Question No : 40 of 43

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

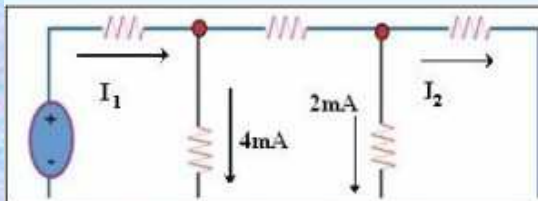
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Question No : 40 of 43

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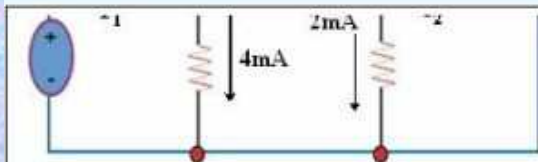
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Question No : 40 of 43

Marks: 5 (Budgeted Time 10 Min)



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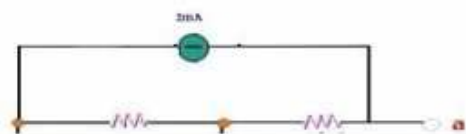
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Question No : 41 of 43

Marks: 5 (Budgeted Time 10 Min)

Using the **Thevenin's Theorem**, find Thevenin's Resistance  $R_{th}$  to the left of a,b . Draw the circuit.



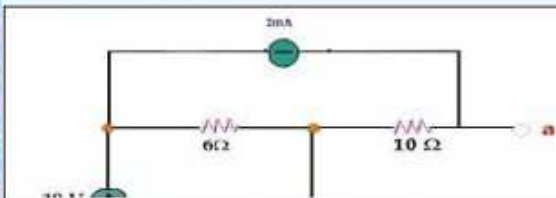
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Question No : 41 of 43

Marks: 5 (Budgeted Time 10 Min)



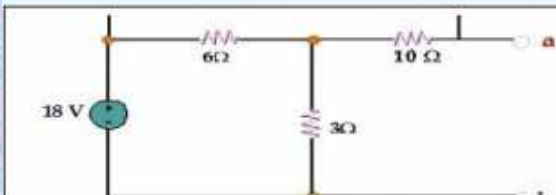
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Question No : 41 of 43

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Question No : 42 of 43

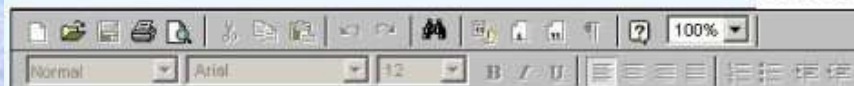
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Find the value of current  $I$  and voltage  $V$  in the circuits shown in figure (a) and (b). (Assuming the diodes to be ideal).



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

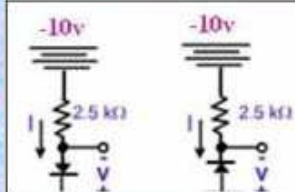
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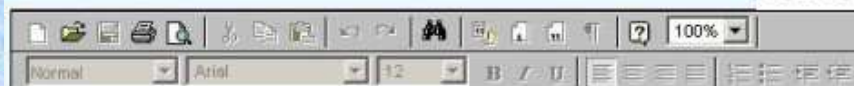
Question No : 42 of 43

Marks: 5 (Budgeted Time 10 Min)



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

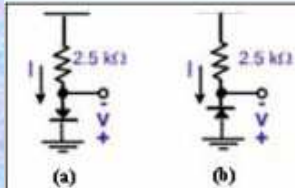
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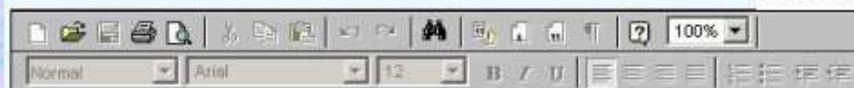
Question No : 42 of 43

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

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Find the value of the diode small signal resistance  $r_d$  at bias current of 0.1mA and 10mA. Assume  $n=1$

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

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