# PHY301 Assignment 1

# Solution Spring 2022

**PHY301 Assignment 1 Solution Spring 2022**: Welcome to Virtual University Spring 2022 semester activities are started now please read the assignment and gdb instructions carefully before submit.

Don't miss these important instructions:

* To solve this assignment, you should have good command over first 6 lectures.
* Upload assignments as MS Word file through LMS, (No Assignment will be accepted through email).
* Write your ID on the top of your solution file.
* All students are directed to use the font and style of text as is used in this document.
* Don’t use colorful back grounds in your solution files.
* Use Math Type or Equation Editor etc for mathematical symbols.
* No excuse will be accepted by anyone if found to be copying or letting others copy.
* Don’t wait for the last date to submit your assignment.
* You can draw circuit diagrams in “Paint” in “Corel Draw” or in “circuit maker”. The simple and easy way is to copy the given figure in “Paint” and do the required changes in it.

## Question No 1

A 20V battery is attached to a circuit containing 2 resistors and a fan having 2 omega resistance.

* Calculate the source current Is.
* Determine the voltages V1, V2, and V3.
* Calculate the power dissipated by each resistor.
* Determine the power delivered by the source, and compare it to the sum of the power levels of part four.

## Question No 2

Answers the following questions

* Why a crow sitting on bare 100kV electric wire not het electric shock.
* Given below are some materials. Mention the conductor, semiconductor and insulator from them.

Silicon, Silver, Iron, Carbon, glass, copper, rubber.

Question No 1 Solution

**1.** 𝑭𝒊𝒓𝒔𝒕, 𝒘𝒆 𝒂𝒅𝒅 𝒂 𝒓𝒆𝒔𝒊𝒔𝒕𝒐𝒓 𝒕𝒉𝒂𝒕 𝒊𝒔 𝒊𝒏 𝒔𝒆𝒓𝒊𝒆𝒔 𝒍𝒊𝒌𝒆 𝑽𝟐𝒂𝒏𝒅 𝑽𝟏 𝒊𝒔 𝒊𝒏 𝒔𝒆𝒓𝒊𝒆𝒔 𝑹𝟏 +

𝑹𝟐 = 𝟓𝒐𝒉𝒎 + 𝟐 𝒐𝒉𝒎 => 𝟕𝟎𝒉𝒎

Now

So,

So,

𝐴𝑠 𝑤𝑒 𝑘𝑛𝑜𝑤 𝑡ℎ𝑎𝑡 𝑉1 𝑖𝑠 𝑖𝑛 𝑠𝑒𝑟𝑖𝑒𝑠 𝑤𝑖𝑡ℎ 𝑉2

𝑅1 + 𝑅2 = 3𝑜ℎ𝑚 + 7𝑜ℎ𝑚 = 10𝑜ℎ𝑚

Now using ohm law for finding source's current

𝑉 = 1 𝑅𝑒𝑞 20𝑉 = 𝐼 10 𝑜ℎ𝑚

20𝑉

𝑙𝑠 =

𝑜ℎ𝑚

10

𝑙𝑠 = 2𝐴

**2.** 𝟐) 𝑫𝒆𝒕𝒆𝒓𝒎𝒊𝒏𝒆 𝒕𝒉𝒆 𝒗𝒐𝒍𝒕𝒂𝒈𝒆 𝑽𝟏, 𝑽𝟐, 𝒂𝒏𝒅 𝑽𝟑

As we know that the ohm law's so,

𝑭𝒐𝒓 𝑽𝟏

𝑉1 = 𝑙𝑠𝑅1

𝑉1 = 2𝐴 ∗ 3 𝑜ℎ𝑚

𝑉1 = 6𝑉

𝑺𝒐, 𝑽𝟐

𝑉2 = 𝑙𝑠 𝑅2

𝑉2 = 2𝐴 ∗ 5 𝑂ℎ𝑚

𝐹𝑜𝑟 𝑉3

𝑉3 = 𝑙𝑠𝑅𝑠

𝑉3 = 2𝐴 ∗ 2 𝑜ℎ𝑚

**3.** 𝟑) 𝑪𝒂𝒍𝒄𝒖𝒍𝒂𝒕𝒆 𝒕𝒉𝒆 𝒑𝒐𝒘𝒆𝒓 𝒅𝒊𝒔𝒔𝒊𝒑𝒂𝒕𝒆𝒅 𝒃𝒚 𝒆𝒂𝒄𝒉 𝒐𝒕𝒉𝒆𝒓.

𝐹𝑜𝑟 𝑃1

𝑃1 = 𝑉1𝑙𝑠

𝑃1 = 6𝑉 ∗ 2𝐴

𝑷𝟏 = 𝟏𝟐𝑾

𝑭𝒐𝒓 𝑷𝟐

𝑃2 = 𝑉2𝑙𝑠

𝑃2 = 10𝑉 ∗ 2𝐴

𝑷𝟐 = 𝟐𝟎𝑾

𝑭𝒐𝒓 𝑷𝟐

𝑃3 = 𝑉3𝑙𝑠

𝑃3 = 4𝑉 ∗ 2𝐴

𝑷𝟑 = 𝟖𝑾

## 4) Determine the power delivered by the source, and compare it to the sum of the power level of part 4.

power dissipation of source will be

𝑃𝑠 = 𝑙𝑠 ∗ 𝑉𝑠

𝑃𝑠 = 2𝐴 ∗ 20𝑉

𝑃𝑠 = 40𝑊

SUM and Compare

## Question No 2 Solution:

𝑃𝑠 = 𝑃1 + 𝑃2 + 𝑃3

𝑃𝑠 = 12𝑊 + 20𝑊 + 8𝑊 40𝑊 = 40𝑊

## Answers the following questions

* Why a crow sitting on bare 100kV electric wire not het electric shock.
* Given below are some materials. Mention the conductor, semiconductor and insulator from them.

Silicon, Silver, Iron, Carbon, glass, copper, rubber.

## Why a crow sitting on bare 100kV electric wire not het electric shock.

Whenever a crow is roosted on a solitary wire of 100kV, its two feet are at a similar electrical potential of 100KV, so the electrons in the wires have no inspiration to go through the crow's body. No moving electrons implies no electric flow.

## Given below are some materials. Mention the conductor, semiconductor and insulator from them.

**Silicon, Silver, Iron, Carbon, glass, copper, rubber.**

|  |  |
| --- | --- |
| **.SILICON** | **.**Semiconductor |
| **.SILVER** | **.**Conductor |
| **.IRON** | **.**Conductor |
| **.CARBON** | **.**Insulator |
| **.GLASS** | **.**Insulator |
| **.COPPER** | **.**Conductor |
| **.RUBBER** | **.**Insulator |