**How do Solar Panels Work Quiz – MS4 – Chemistry 30** Students Name:

Score: /10

1. On the Periodic Table, where can you find elements that are used to develop semiconductors?

To show your understanding, provide two examples of elements that are used in semiconductors. (1.5 marks)

1. Semiconductors are often made with elements that are: (1 mark)
   1. metals that do not conduct electricity well
   2. non-metals conduct electricity well
   3. alloys that conduct electricity well
   4. metalloids that do not conduct electricity well
2. N-type (negative) semiconductors have \_\_\_\_\_\_\_\_\_\_\_\_\_ electrons because of the inclusion of \_\_\_\_\_\_\_\_\_\_\_\_. (1 mark)
   1. Extra, phosphorous c. Extra, boron
   2. Too few, phosphorous d. Too few, boron
3. Provide a labelled illustration of what a P-N Junction is. Briefly describe what you have drawn. (1.5 marks)
4. Photons of light can excite and expel electrons from a material. This is referred to as \_\_\_\_\_\_\_\_\_\_\_\_\_\_. If the expelled electrons can be captured within the material to do work it is referred to as the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. : (1 mark)
   1. The Photovoltaic Effect, The Photoelectric Effect
   2. The Photoelectric Effect, The Electromagnetic Effect
   3. The Photoelectric Effect, The Photovoltaic Effect
   4. The Electromagnetic Effect, The Photovoltaic Effect.
5. In your own words, how does a solar panel work? Use only the space provided here. (2 marks)
6. Solar power generation provides renewable energy, but the technology as it has been used historically has some limitations. What is one of those limitations? Describe briefly how the SmartFlower technology helps to overcome any one of those issues. (2 marks)