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**120 Micro Electronics**

Test 3

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

REVIEW

Lab 9 and 10

1. Know 4 ways to identify the NPN and PNP Transistor

Number, Pin out, Symbol, function (how they operate)- draw them-

1. Effects of a Capacitor on/in a circuit-

Lab 11

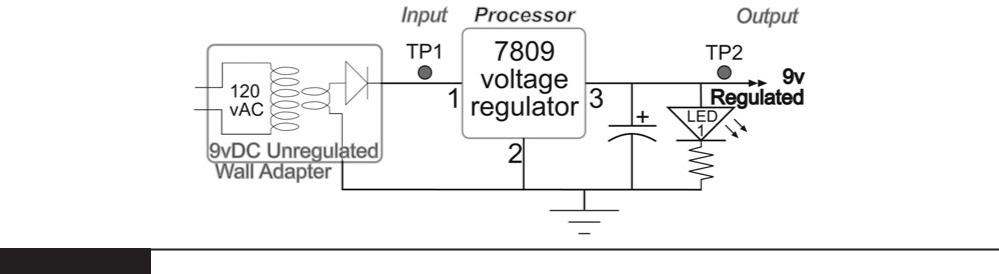
1. Know Photo Transistor, symbol, function of the gate, do phototransistors act like NPN or PNPs? Know what is an LDR- the symbol and how they work back on Pg 21 they conduct electron flow.
2. Here is a question- LDRs response time is measured in Ohms per millisecond. The phototransistor is measured in microseconds, that 1,000 times faster than a LDR can you explain why the difference in response time? Pg 40

Lab 13

1. What does SCR stand for, symbol, and leg pin out, what is meant by “latching” or “trapdoor” abilities. How is an SCr a transistor? What is the difference between a Triac and a Diac?

Lab 14

1. The voltage regulator “regulates” output- why and how is this necessary/done?
2. Describe unregulated voltage and “stable” or Regulated voltage and how each occur in a circuit.
3. Describe what the capacitor helps do in the circuit.



Binary to Decimal and Back

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Bit number | Bit 8 | Bit 7 | Bit 6 | Bit 5 | Bit 4 | Bit 3 | Bit 2 | Bit 1 |
|  |  |  |  |  |  |  |  |  |
| Value | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |
|  |  |  |  |  |  |  |  |  |

1. Translate the following 8-bit binary codes to the decimal equivalent.

Binary Decimal

10101100

01100110

10010011

00110001

1. Looking at the IC from the top, the reference notch should be to the left or if in a breadboard- to the top . Then, pin 1 is on the bottom left. The numbering starts there and moves counterclockwise. Usually 1-14 with 14 being Voltage in and 7 Ground.

Comparing the Gates

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| NOT | |  | AND |  |  | OR |  |  | NAND |  |  | NOR |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| In | **Out** | In A | In B | **Out** | In A | In B | **Out** | In A | In B | **Out** | In A | In B | **Out** |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | **Put** |  | **Put** |  | **Put** |  | **Put** |  | **Put** |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| High | **Low** | High | High | **High** | High | High | **High** | High | High | **Low** | High | High | **Low** |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Low | **High** | High | Low | **Low** | High | Low | **High** | High | Low | **High** | High | Low | **Low** |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | Low | High | **Low** | Low | High | **High** | Low | High | **High** | Low | High | **Low** |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | Low | Low | **Low** | Low | Low | **Low** | Low | Low | **High** | Low | Low | **High** |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |