

EECS 40

Final Project Additional Information

1 Notes

1. The final project will be worth 45 points since it will take 3 lab sessions.
2. The grading will be based on the lab report and circuit functionality. A typed lab report is preferred. Hand written reports are fine as well but it must be neat.
3. Lab Reports will be due at the start of your second lab session of week 8.

2 Grading Breakdown

1. Circuit Functioning: 30% Check off with TA.
2. 4.5 V Power Supply: 16%
Circuit Diagram: 2%
Analysis: 7%
Analyze circuit, such as design principles, important issues. Explain as much detail as possible to show you understand how it works.
Results: 7%
Provide measured results, such as waveforms, signal frequency, important voltage levels etc.
Also include a comparison between analysis and measurement.
3. Square Wave Generator: 16%
Circuit Diagram: 2%
Analysis: 7%
Analyze circuit, such as design principles, important issues. Explain as much detail as possible to show you understand how it works.
Results: 7%
Provide measured results, such as waveforms, signal frequency, important voltage levels etc.
Also include a comparison between analysis and measurement.
4. Light Generation and Detection: 16%
Circuit Diagram: 2%

Analysis: 7%

Analyze circuit, such as design principles, important issues. Explain as much detail as possible to show you understand how it works.

Results: 7%

Provide measured results, such as waveforms, signal frequency, important voltage levels etc.

5. Comparator and Buffer: 16%

Circuit Diagram: 2%

Analysis: 7%

Analyze circuit, such as design principles, important issues. Explain as much detail as possible to show you understand how it works.

Results: 7%

Provide measured results, such as waveforms, signal frequency, important voltage levels etc.

6. AND Gate: 6%

Circuit Diagram: 2%

Analysis: 2%

Analyze circuit, such as design principles, important issues. Explain as much detail as possible to show you understand how it works.

Results: 2%

Provide measured results, such as waveforms, signal frequency, important voltage levels etc.

You may want to provide a measured voltage logic table as done in the diodes lab.

3 Extra Credit: up to 4 points

If you are going to do extra credit, make sure that the functionality of the extra parts of the circuit are verified with the TA and be sure to include the circuit diagram (with component values), analysis, and results.

1. Maintaining the basic function of the circuit, add a buzzer to it to make it buzz with the red LED in phase. When the red LED is on, the buzzer is buzzing. When the red LED is off, the buzzer should be silent. Note – the buzzer will not work powered with just a DC voltage. It is like a speaker and requires some AC signal within the range of human hearing. (1 point)
2. Make the LED flashing speed adjustable. Or if you've already added in the buzzer (see part 1), you can try to make the buzzer pitch adjustable (higher or lower tone). (1 point)

3. Maintaining the basic function of the circuit, add another yellow LED flashing together with the green one, but out of phase (or with π phase shift), which means when green is on, yellow is off and vice versa. However, when the red LED is on, both green and yellow should be off. (1 point)
4. Open question. Be creative and make your own modifications to the circuit. For instance, modify the circuit so you can play a song on it. Or make the speaker pitch or flashing speed of the diode change based on the light intensity. (1 point)