Rubric for Homework #2

- Each problem worth 5 points
- Check along left side means earned all 5 points
- Total minus points for a problem is along left side of page

Answers not labeled clearly: -1 overall (e.g. Problem 1 : R-1.12)
Low Readability: up to -3 per question
Lack of Clarity: up to -3 per question
Missed/wrong ideas or facts: -1 per idea/fact
Answer too long: up to -2 per question

If minus points not labeled, they are for missing ideas/facts.

Problem 1 : R-2.7

The basic idea is that the experienced thief will, upon reconnoitering, recognize the locks as being from either Acme or Smacme. The thief will try one lock for up to about a half-hour. If he can successfully open the lock during this time, he is done. If he can't, he will assume that it's an Acme two-hour lock and will move on to the other lock, which, in this case, will result in being successfully opened in about a half-hour, for a total of about 1 hour. In either case, the total time is about an hour or less.

Problem 2 : R-2.14

This problem implicitly references the example on pg. 80 of chapter 2.

The receiver (car), at any time, has a sequence of 256 codes that, if the key fob sends that code, will result in the car carrying out the requested action. However, if the key fob button is pressed 257 times while far enough away from the car so that the car cannot sense the signal, the key fob will with almost certain probability generate further codes that will not be in the car's 256 code sequence. The car and the key fob are no longer synchronized. They will need to be resynchronized using a factory reset mechanism.
Problem 3 : R-2.17

- Do the biometric ID characteristics (columns) possess these properties (rows)?
- Only the first 4 properties are required
- ? marks answers that could go either way depending on interpretation

<table>
<thead>
<tr>
<th></th>
<th>DNA</th>
<th>Dental X-Ray</th>
<th>Fingernail Length</th>
<th>Blood Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Universality</td>
<td>Yes</td>
<td>Yes (?)</td>
<td>Yes (?)</td>
<td>Yes</td>
</tr>
<tr>
<td>Distinctiveness</td>
<td>Yes</td>
<td>Yes</td>
<td>No (?)</td>
<td>No</td>
</tr>
<tr>
<td>Permanence</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Collectibility</td>
<td>Yes (?)</td>
<td>No (?)</td>
<td>Yes</td>
<td>Yes (?)</td>
</tr>
<tr>
<td>Performance</td>
<td>No (?)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Acceptability</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Circumvention</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

Problem 4 : C-2.3

I was stumped for a while on this one.

The idea I came with is that there is a short chain between each of the locks. Take first lock and lock it on one end of the first short chain (e.g. short chain has two or three links in it). Take the 2nd lock and lock it to the other end of the first chain and to an end of a second short chain. And so on until all the locks are used up. The unlocked end of the last chain would then be locked up with the first lock. If the length of the chain is too long or short, then the length of the short chains can be adjusted.

Some people gave solutions that would have required an expert in locks. I gave partial credit as I saw fit in relation to the plausibility. However, the question never mentions a lock expert.

Problem 5 : C-2.6

Problem statement seems to have an error. It says "three of the keys are covered in dust" while it lists 4 keys that have considerable wear.

For full credit, I will accept two possible answers:

3 x 3 x 3 x 3 = 81
or
4 x 4 x 4 x 4 = 256

Problem 6 : P-2.5

Faraday cage construction - 5 points
Does it block? – 5 points
Holes – 5 points  (for full credit, some hole measurements must be mentioned)
Pictures – 5 points
Report/Description – 5 points