(a) Consider a gamble in which you have even chances of winning or losing $100. Your expected gain or loss will be $0 and you should therefore be indifferent to gambling or not gambling. Explain Bernoulli’s idea, at the foundation of Expected Utility Theory, that instead says you will be risk-averse. [4 marks]

(b) Kahneman’s 2002 Nobel Prize Lecture features the following two problems:

<table>
<thead>
<tr>
<th>Problem 2</th>
<th>Problem 3</th>
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</table>
| **Would you accept this gamble?**
| 50% chance to win $150
| 50% chance to lose $100
| **Which would you choose?**
| lose $100 with certainty
| or
| 50% chance to win $50
| 50% chance to lose $200
| **Would your choice change if your overall wealth were lower by $100?**
| **Would your choice change if your overall wealth were higher by $100?**

Explain all the important points made by these problems, including why they are related. Show how they demonstrate “Bernoulli’s error”, in the context of Prospect Theory being a critique of Expected Utility Theory. [8 marks]

(c) Sketch the main graph of Prospect Theory and describe its most significant features, with reference to the two problems in (b). [4 marks]

(d) Explain what is meant by “tragedy of the commons” and how the concept relates to password usability. [2 marks]

(e) Explain what is meant by “compliance budget” and how the concept relates to password usability. [2 marks]