Questions:

1. Choose 3 types of indirect-control pointing devices. For each of the selected types provide a short description and indicate a couple of applications in which they can be used. [10 points]

2. In relation with collaborative interactions and interfaces, explain what is meant by: electronic commerce, online communities, and telepresence. [10 points]

3. Consider error messages. Briefly describe 4 guidelines for the end product. Illustrate two of the guidelines with concrete examples of improved error messages (i.e., an initially poor and then a better message that follows the guideline). [10 points]

4. Compare and contrast online documentation with paper documentation. [10 points]

5. Consider the following types of visualization data: 2D map data and multidimensional data. Briefly describe each of the two types, give a couple of application examples for each, and indicate typical tasks that the users can perform on each of these data types. [10 points]

6. Comment on keyboards and other text entry methods for mobile devices -- briefly indicate their characteristics, advantages, and limitations. [10 points]

7. Briefly describe 4 challenges or areas of research for Information Visualization (2-3 lines each). [5 points]