1. Universal Usability (2 * (5 + 2) = 14 pts)

Computer users are extremely diverse in their background and circumstance; Universal Usability is a principle that recognizes this diversity, and stresses the importance of accommodating the needs of all users, not just users with special needs such as children, older adult or the physically disabled.

   i. Explain two other circumstances where Universal Usability can be applied (i.e. for users without special needs such as the above).
   ii. Describe an example design implementation of each.

2. Golden Rules (4 * 2 = 8 pts)

Name four of the eight Golden Rules, and provide one example of each.

3. Object-Action Interface (OAI) (8 + 4 + 4 = 16 pts)

OAI provides a useful model for understanding, as well as designing for human-computer interaction.

   i. Describe the OAI model with examples from the e-mail client application depicted in Figure 1.
   ii. Explain the importance of separating tasks, interfaces, objects and actions.
   iii. Draw a simple (abstract) hierarchy to illustrate these distinctions.

![Microsoft Outlook Express](image)

Figure 1: Microsoft Outlook Express

4. Methodology & Evaluation (2 * 15 = 30 pts)

A group of bright UMD undergraduates, frustrated with the UM-Shuttle system, have approached the UM-Transportation Director with a proposal to create an interactive Shuttle Routes and Schedule application for commuters. They have even created a prototype Flash application where users are able to select and see one or more routes on a map, and display the schedule as well. As a member of this group, you have decided to pursue this project more formally using the LUCID methodology. For the following stages:
1. Discovery: Imagine that you are a team of 3 students with two weeks to complete this phase. How will you propose to the Director to identify the characteristics and needs of your target users? Also provide a sample timeline that identifies the stages of your study. (15 pts)

2. Design: Imagine that at this point, you have created a new-improved design based on the discovery study. With the same team of three students and another two weeks, how will you propose to the Director to evaluate your new design? Describe briefly the setup of your study, including the details you will be evaluating, the users you intend to study, as well as example interpretation of possible results. (15 pts)

5. Tools (2 * 6 = 12 pts)

When designing a user interface, there are several considerations when choosing a tool to build the user interface with. What would motivate you to choose a graphically oriented tool such as Adobe Flash or PowerPoint, over a programming-oriented tool such as Java or C++? Vice-versa?

6. Direct Manipulation (6 + 14 = 20 pts)

i. Name and describe in one sentence each the three principles of Direct Manipulation. (6 pts)

ii. The Figure 2 depicts a graphical computer desktop that is typical today. (14 pts)
   a. Explain two examples of how it applies the principle of Direct Manipulation.
   b. Explain one example of how it violates the principle of Direct Manipulation.

   *Your answer may be based on your personal experiences.*