Exam Instructions (read carefully):

1. **Immediately** sign the first page of the exam with your **signature** in the space provided on the upper left.

2. Continue reading the instructions on this page and complete the **peer review**, which is on a separate sheet not attached to the exam booklet. **Do not open the exam booklet** until you are told to do so by a proctor.

3. Cheating is an academic offense. Your signature on the exam indicates that you **understand** and **agree to** the University’s policies regarding cheating on exams.

4. The exam is **closed book**. There are **no aids permitted**.

5. You will have **150 minutes** in which to work. This is ~1 min/mark, plus 30 additional minutes. **Budget your time wisely**.

6. No one will be permitted to leave the exam room during the **last ten minutes** of the exam.

<table>
<thead>
<tr>
<th>Question</th>
<th>Points Possible</th>
<th>Class Mean</th>
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<tbody>
<tr>
<td>1</td>
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<td>2</td>
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<td>extra credit</td>
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<td><strong>Total</strong></td>
<td><strong>120 (+5)</strong></td>
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Question #1 [10 pts]: Warmup

For each of the following questions, circle True or False. [1 pt each]

(a) When we say “Attention is the gateway to memory”, we are referring to how information moves from working to long-term memory.

   True   False

(b) Task examples are design-independent. This makes them useful for debugging specific designs.

   True   False

(c) A designer imagining what a user will do or how a user will feel when interacting with a system embodies an attitude of user-centered design.

   True   False

(d) A novel ‘ubicomp’ interface allows a cell phone user to share control of a large shared display at a bar. A practical and effective approach to designing this system’s user interface is to focus on one key element - usability - while the hardware design team handles functionality, information privacy and security.

   True   False

(e) Cognitive walkthroughs are a good evaluation choice when the question is to assess how novice users will interact with a system.

   True   False

(f) Once formed, a mental model is very difficult to change.

   True   False

(g) A stakeholder is defined as anyone who will eventually use the interface being designed.

   True   False

(h) Sending designers to interview workers in an office setting is an example of contextual inquiry.

   True   False

(i) Affective reactions are what allow us to make decisions.

   True   False

(j) Douglas Engelbart demonstrated the first prototype of a computer mouse and chorded key input devices, the first use of a GUI “desktop metaphor”, and networked multi-user collaboration with shared control of a cursor, all at the same time, live, at a conference in San Jose – long before technology had even made the idea of a personal computer feasible, and when San Jose was a dusty little agricultural town.

   True   False
Question #2 [12 pts]: Short Answer

(a) Early in 344, you saw a sketch of Moore’s Law and “Darwin’s Law” superimposed; this was offered as a justification for why HCI is important. Reproduce the key elements of this sketch (i.e. draw a diagram which contrasts these two laws, giving some attention to labeling of the time axis), and explain in 1 sentence how this relates to HCI [4 pts]

(b) Explain the difference between prescriptive and descriptive HCI design models and identify their respective primary target users, in 2-3 sentences. [4 pts].

(c) “Triangulation” refers to the need to use multiple faulty methods in the effort to get reliable information about a question.

What needs to be true, as a group, about those faulty methods in order for this scheme to actually work? Give an example of 2 methods you could use together to triangulate as you get information from users, and explain why. [4 pts]
Question #3 [11 pts]: Design Concepts and Mental Models

SCENARIO: You are on vacation in Japan. You don’t know Japanese. You want to buy a Coke from a vending machine, which is of a kind you have never seen before and seems to be able to do a lot of things that vending machines in North America don’t do. You’d rather not use your credit card for this small purchase. You have a handful of local coins, but aren’t sure how much they’re worth.

(a) List and describe/justify in 1-2 sentences three general, basic concepts (many more are possible) of good user interface design that a designer might employ when creating the interface for the vending machine scenario above; and why that concept is important and particularly relevant to the design task at hand. [3 pts each]

For example (don’t use this one!), “Provide a clear visual affordance, so that the user understands which actions are possible. This is important for a walk-up-and-use interface like a vending machine.”

(i)

(ii)

(iii)

(b) Your answers to part (a) are characteristics of (circle one): [2 pts]

- Designer’s model
- System image
- User’s mental model
- System model

Question #4 [9 pts]: Goal Oriented Action - REMOVED

Question #5 [11 pts]: Planning and Executing Evaluations and Prototypes - REMOVED
Question #6 [19 pts]: Initiating a Design Project

The voice mail system used by many universities across the country (a product made by a company called VoiceBin Inc.) has received a lot of complaints from end-users. The universities have communicated to VoiceBin that there are problems (without being very specific about them), and threatened to switch to another vendor if VoiceBin doesn’t improve things. Therefore VoiceBin has retained you, as an interface consultant, to investigate the problem and work with their in-house design team to solve these problems.

(a) Who are the stakeholders you need to consider throughout this design process? List four, ordered by decreasing importance. Be specific. [4 pts]

(i) 
(ii) 
(iii) 
(iv) 

(b) You are planning your strategy for your first step. In general terms, list 5 items which MUST be done at this stage for each iteration step in any design process (not just for this one). [5 pts]

(i) 
(ii) 
(iii) 
(iv) 
(v) 

(c) Describe the first step you will take, by thoughtfully and thoroughly addressing each of your 5 points above, relative to this design scenario in 1-2 sentences each. [10 pts]

(i) 
(ii) 
(iii) 
(iv) 
(v)
The image above shows the **shutdown menu** (located in the right side of the image) of the new Windows Vista operating system.

(a) Comment on the shortcomings of this menu, focusing on functional rather than visual aspects. [3 pts]

(b) Describe two changes you would make to the menu to improve it as an interface. Your answer may involve changing the options available. [3 pts]
Question #10 [15 pts]: Collaborative Interfaces

You have been asked to help select collaboration tools for a development team working together on a large software project. For each of the three scenarios below and on the following page, pick out a different CSCW technology from the list provided. For each scenario there are multiple good answers, depending upon your assumptions.

Your answer should include

(i) **Type of technology** you would use to support the scenario’s collaboration. If necessary, you may **pair 2 technologies together** to achieve the needed functionality. [1 pt each]

(ii) Whether the usage of this technology will be **co-located** or **distributed** [0.5 pts each]

(iii) Whether the usage of this technology will be **synchronous** or **asynchronous** [0.5 pts each]

(iv) **One reason why** it is a good solution [3 pts]. **Explain any assumptions you are making.**

<table>
<thead>
<tr>
<th>List of CSCW technologies to use in part (i)</th>
</tr>
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<tbody>
<tr>
<td>E-mail</td>
</tr>
<tr>
<td>Electronic whiteboard</td>
</tr>
<tr>
<td>Regular whiteboard</td>
</tr>
<tr>
<td>Instant messaging</td>
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<tr>
<td>&quot;Tracking changes&quot; in an Office document</td>
</tr>
<tr>
<td>CVS ( Concurrent Versioning System)</td>
</tr>
<tr>
<td>repository - allows version control and change integration of plain text documents</td>
</tr>
<tr>
<td>Pen, paper and scotch tape</td>
</tr>
<tr>
<td>Multiple PDAs (bluetooth or wifi equipped)</td>
</tr>
<tr>
<td>Videoconferencing</td>
</tr>
<tr>
<td>Telephone (1 to 1)</td>
</tr>
<tr>
<td>Voice mail (1 to 1)</td>
</tr>
<tr>
<td>Telephone (conference call, i.e. 3+ parties)</td>
</tr>
<tr>
<td>Projector driven by a pen-input tablet laptop</td>
</tr>
</tbody>
</table>

(a) Scenario: During a weekly status meeting in the company board room, the team leader wants to display some statistics on the project's progress, and allow his team members to annotate them.

(i) Technology:

(ii) Co-located / Distrib (circle one)

(iii) Synch / Asych (circle one)

(iv) Justification:
Question #10, continued: Collaborative Interfaces

(b) Scenario: A software developer located in Vancouver wants to ask his co-worker in Toronto a question about some of her code. He does not need an immediate answer, but would like one within 24 hours.

(i) Technology:

(ii) Co-located / Distrib (circle one)

(iii) Synch / Asynch (circle one)

(iv) Justification:

(c) Scenario: An instructor is holding a review session in preparation for an exam in a class of 15 students. As students ask questions, the instructor needs to informally illustrate points so all can see them, while students take notes.

(i) Technology:

(ii) Co-located / Distrib (circle one)

(iii) Synch / Asynch (circle one)

(iv) Justification:
EXTRA CREDIT: Physical Interfaces [1-5 pts] [used in all KM finals]

Suggest an example (other than those shown in class) of a useful physical metaphor that could be implemented in a haptic interface. For example, mentioned in class was the debit card whose “weight” you could feel when you swiped it, representing the amount of money in the account; and the “clutched film reel” metaphor for browsing streaming media such as video.

Partial credit will be given according to the quality and innovativeness of the idea.

This is a shameless ploy to use your brains for fresh new research ideas. If you come up with something I would like to use and have not thought of or seen elsewhere, I’ll contact you to discuss using your idea.