The exam text is in English. You should answer the questions either in English or in Dutch. In either language and for all answers you should be **concise**! Mark the answer with the question number and use a new page for each of the answers. Clarity in the arrangement of the answers is much appreciated as it greatly helps correction of the exam. **At completion of your exam, hand in the question sheet together with your answer sheets.** The exam starts at 10.00 hrs and ends at 13.00 hrs. Success!

**Question 1 (30 points)**
Answer the following fifteen statements by first stating whether it correct or incorrect and then followed by a ONE-sentence motivation of the answer.

- a) GOMS a technique that is very suitable in the early phase of interaction design.
- b) The Waterfall Life Cycle Model is a software development model designed for User Interaction and Interfaces.
- c) The HSL color model is typically used for screen design.
- d) Earcons are icons that visually express an audible interaction.
- e) The Stroop effect illustrates a conflict in experiential and reflective cognition.
- f) The state of affect influences how humans react to responses, therefore for HCI it is important to know about this state.
- g) The Model Human Processor is a theoretical concept not used in the daily practice of User Interface Research and Design.
- h) A Horizontal prototype includes as much functional components as possible.
- i) CATWOE is an essential component in Open System Task Analysis (OSTA).
- j) Captology is the major concept in persuasive computing.
- k) Surface mail is considered a bad metaphor for e-mail.
- l) The principle of continuity refers to the simplification of a stimulus by filling in missing parts in nearly closed lines.
- m) In a well designed User Interface, the systems image and the mental image are completely different.
- n) A functional mental model is also referred to as the how-it-works model.
- o) Experimental Evaluation is a technique in which the user chooses the experimental conditions to be tested and the evaluator integrates these in a set of hypothesis.

**Question 2 (25 points)**
The research in cognitive sciences has contributed significantly to the field of HCI, this is reflected in some of the important concepts in still valuable in HCI. During the lectures these key concepts were gradually introduced and repeated where appropriate.

- a) Name and explain the key concepts in HCI (minimal of 4 concepts) 

HCI has greatly benefitted from theories that have been developed in cognitive science; one of the still valuable theories is the theory of Gestalt.

- b) What is Gestalt and why is it important to the field of HCI. Explain the most important concepts in Gestalt (minimal of 4 concepts).

Initially the field of HCI was the domain of experimental cognitive scientists, gradually theories native to HCI were formulated and developed. The process of interaction gained deeper understanding through the theories of Norman as well as those of Abowd and Beale.

- a) Explain the 7 stages model of Donald Norman and elaborate on its context in HCI.
- b) Explain the extensions that were formulated by Abowd and Beale in their model for interaction.
- c) Explain the *gulf of execution* and the *gulf of evaluation* in the context of these interaction models.
**Question 3** (20 points)

Like a regular software project, a good requirements engineering is a substantial part of the design of an interface. One of the important techniques is task analysis.

- **a)** Explain what the interface designed will learn from a Task Analysis.

Hierarchical Task Analysis and Decomposition is a particular form of Task Analysis that is often used.

- **b)** Explain this form of Task Analysis; Give the major questions asked to come to a result in a Hierarchical Decomposition.
- **c)** What tools are used to support a Hierarchical Task Analysis

Next to task analysis, in the initial phase of design special focus is given to further characterize the user.

- **d)** What techniques are employed to characterize the user in the design process? And how should these techniques put in a time scale for interface/interaction development.

**Question 4** (25 points)

Surface computing uses a multi-touch screen as the major interface for computing. Microsoft developed an application for this type of computing about 3 years ago (2007). Nowadays, surface computing starts invading the market and companies think of new applications that are suitable for this type of computing. A company decides to make a product using the coffee-table concept central to surface computing for a video-editing table that should be used in a setting for quickly editing your home video footage to a short video that can be played for friends. The idea behind this concept is that the editing is realized in a collaboration of the customer with a professional video editor. Together they are at the coffee-table composing the end-product, i.e. the video-DVD.

You are asked to participate in the preparation of the development of the product through writing a report for the software developers and interaction designers.

- **a)** Write a scenario with persona’s that will be the future users of this service.
- **b)** Give the stakeholders of this service/product.

The company is interested in an augmented feedback of this system and asks for a design including a haptic perception.

- **c)** What is haptic perception in context of HCI? What augmented feedback you recommend here.

The company wants a clear view on how to evaluate the designs that are being presented so as to keep the design trajectory as short as possible.

- **d)** Write a short report with recommendations for a strategy for evaluation of the design.
- **e)** Finally, explain how usability should be studied for this service by writing a usability specification for the company.