UNIVERSITY OF LONDON

FOR EXTERNAL STUDENTS (East)

B. Sc. Examination 2005

CIS 315 HUMAN-COMPUTER INTERACTION

Duration: 2 hours and 15 minutes

Date and time:

Do not attempt more than THREE questions. All questions carry equal marks and full marks can be obtained for complete answers to THREE questions.

Electronic calculators may be used. The make and model should be specified on the script. The calculator must not be programmed prior to the examination. Calculators which display graphics, text or algebraic equations are not allowed.

THIS EXAMINATION PAPER MUST NOT BE REMOVED FROM THE EXAMINATION ROOM.

Question 1

Psychology

a. Explain **each** of the following terms which relate to human memory.

(i) short-term memory *2 marks*

(ii) chunking *2 marks*

(iii) long-term memory *2 marks*

(vi) recall *2 marks*

(v) interference *2 marks*

*Note that drawing diagrams to support your answers will be useful but it is **not** necessary for this question to reproduce the Model Human Processor.*

b. From applications you know well, fully describe **two** different human-computer interfaces which effectively make use of appropriate characteristics of human memory. *10 marks*

c. What do you consider to be crucial aspects of human memory in terms of good HCI design? Justify your choice and give an example from your own use of interactive computer systems. *5 marks*

Note that drawing diagrams to support your answers will be useful and that you must not simply rework reproduce your answer to part b.

Question 2

Task Analysis

a. What is HCI Task Analysis and why is it used in Human Computer Interaction design? *5 marks*

b. Discuss, with examples, how HCI Task Analysis techniques can be used at different stages in HCI systems development. *5 marks*

At which stage do you consider such techniques to be most beneficial? Justify your answer. *2 marks*

c. Describe in full **two** different HCI Task Analysis techniques. Give suitable examples of **both**, using diagrams and **correct notations**. *13 marks*

*Note that you should describe only HCI TA techniques, **not** those which derive from Systems Analysis.*

Question 3

Evaluation & Modelling

a. Describe the discount usability techniques of (i) *'heuristic evaluation'* **and** (ii) *'cognitive walkthrough'***.** *10 marks*

b. Draw up a table detailing the (i) advantages **and** (ii) disadvantages of discount usability techniques. *6 marks*

c. Identify the practical problems encountered when HCI designers use Cognitive Walkthrough. How can these problems be overcome? *4 marks*

d. How can models of users help in the design and evaluation of interactive systems? *5 marks*

Question 4

Design support

a. What is meant by EACH of the terms below?

(i) UIMS (User Interface Management System) *2.5 marks*

(ii) UI (User Interface) Toolkit *2.5 marks*

(iii) Rapid prototyping *2.5 marks*

(iv) Horizontal and vertical prototypes *2.5 marks*

b. Describe the following techniques which can be used for prototyping and the evaluation of user-interface designs. Give examples of **each** and use diagrams if appropriate.

(i) storyboards and design scenarios *2.5 marks*

(ii) Wizard of Oz simulations *2.5 marks*

(iii) throw-away prototypes *2.5 marks*

c. When, and in which situations, might **each** technique be used? Use examples to support your answers. *7.5 marks*

Question 5

Design and Modelling

a. Define **each** of the following terms which relate to *'design models' i*n HCI. Support your answer with examples and diagrams.

(i) mental model *4 marks*

(ii) user's model *4 marks*

(iii) designer's model *4 marks*

b. Describe how a user develops his or her model of a computer system. Give examples to illustrate your answer. *4 marks*

c. How would you apply an understanding of these models if you had to design the interface and the metaphor to be used for a visual index to a database of digital photographs? *9 marks*

END OF EXAMINATION