

UNIVERSITY of LONDON  
B.Sc. EXAMINATION 2008  
for External Students

291 0315 ZA

**COMPUTING AND INFORMATION SYSTEMS AND  
CREATIVE COMPUTING**

2910315            HUMAN-COMPUTER INTERACTION  
Western

Duration: 2 hours 15 minutes

Date and Time: Tuesday 13 May 2008 : 2.30 – 4.45 pm

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

A hand held calculator may be used when answering questions on this paper but it must not be pre-programmed or able to display graphics, text or algebraic equations. The make and type of machine must be stated clearly on the front cover of the answer book.

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

### Question 1 (*Psychology*)

- a. Outline the characteristics of **both**:
    - (i) human short term memory 5 marks
    - (ii) human long term memory 5 marks
  - b. Fully describe **two** different models of long-term memory. 10 marks
  - c. What is meant by the **each** of the terms below: 3 marks
    - (i) chunking
    - (ii) closure
    - (iii) interference.
- Discuss how these features of human memory have been used in the design of screen-based interfaces. 2 marks

Use diagrams to specifically illustrate your answer - do not simply reproduce the 'Model Human Processor' diagram.

### Question 2 (*Design support*)

- a. Describe the role of **each** of the following in the context of user-centred design. Identify **for each** the type of information provided **and** disadvantages of the technique.
  - (i) co-operative design 4 marks
  - (ii) cognitive task analysis 4 marks
  - (iii) usability metrics 4 marks
  - (iv) sketching and design prototypes. 4 marks
- b. Explain how you would use **one** of the four techniques listed above in the early design stages of developing a shared diary application. 9 marks

### Question 3 (*Design and Modelling*)

- a. What is the difference between the term '*user interface*' and that of '*human-computer interaction*'? 3 marks
- b. Fully describe, with appropriate diagrams, (i) '*the user's model*' **and** (ii) '*the designer's model*' of an interactive computer system. 6 marks
- c. Distinguish clearly between the two terms in (b), illustrating your answer with suitable examples from different computer applications. 6 marks
- d. Describe as a **brief case study** some of the 'participatory design' methods which allow users to be actively involved in the development and evaluation of interactive systems. 10 marks

**Question 4** (*Prototyping*)

- a. Why is prototyping so important in HCI design? 2 marks
- b. Draw up a table to describe the role in the design process of **each** of the following design tools and techniques:
  - (i) requirements analysis 4 marks
  - (ii) design notations 4 marks
  - (iii) cognitive task analysis. 4 marks
- c. Describe the problems that designers may face when using the above tools and techniques. 3 marks
- d. An e-learning system for primary school pupils is being specified. Illustrate how paper and pencil prototyping could be used in the early stages of the interface design. 8 marks

**Question 5** (*Task Analysis*)

- a. What is HCI Task Analysis? Why is it used in systems design? 2 marks
- b. Discuss, with examples, how HCI Task Analysis techniques can be used at different stages in HCI systems development. At which stage do you consider such techniques to be most beneficial? 5 marks
- c. Describe in full two different HCI Task Analysis techniques. Give suitable examples of both, using diagrams and correct notations. 18 marks

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

**END OF EXAMINATION**