UNIVERSITY OF LONDON

FOR EXTERNAL STUDENTS (East)

B. Sc. Examination 2006

COMPUTING AND INFORMATION SYSTEMS

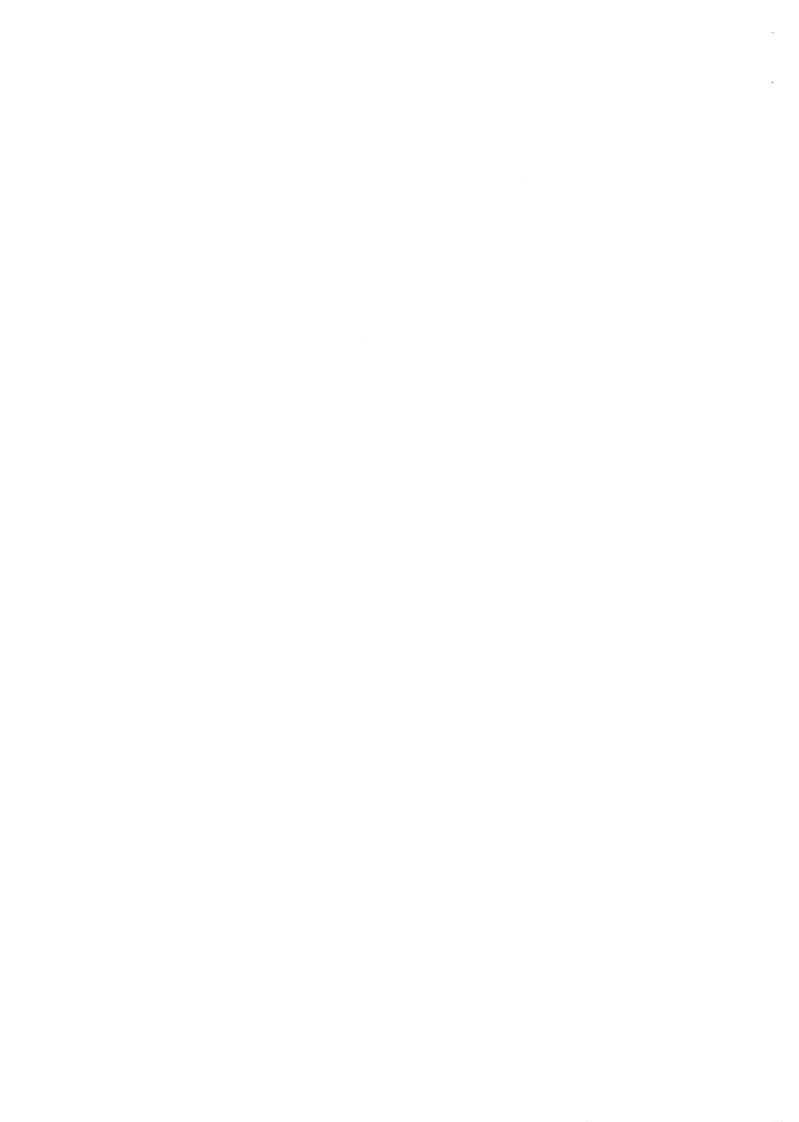## CIS 315   HUMAN-COMPUTER INTERACTION

Duration: 2 hours and 15 minutes

Date and time: Friday 19 May 2006: 2.30 - 4.45pm

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 (25 marks)

a. Explain **each** of the following terms used to describe aspects of human memory.

    (i)   sensory memory   *2 marks*

    (ii)   chunking   *2 marks*

    (iii) recall   *2 marks*

    (iv) forgetting   *2 marks*

    (v)   interference   *2 marks*

b. For **human memory**, describe in detail the process and models of:

    (i)   short-term memory   *3 marks*

    (ii)   long-term memory   *4 marks*

    Drawing diagrams to support your answers will be useful but it is NOT necessary for this question to reproduce the Model Human Processor.

c. What are the practical implications of the capabilities and limitations of human memory for user interface design?   *8 marks*

Question 2

HCI Task Analysis (25 marks)

a. Detail the outputs from **three** different HCI Task Analysis approaches - *but do not provide worked examples.*   *3 marks*

b. Give **at least four** practical uses of information derived from Task Analysis.   *4 marks*

c. What are the following techniques for collecting data in Task Analysis?

    (i)   structured interview   *5 marks*

    (ii)   questionnaire   *5 marks*

    (iii) observations   *5 marks*

d. When would you use **each** of the **above** techniques?   *3 marks*

Question 3

Evaluation (25 marks)

a. From an HCI viewpoint, why is it important to evaluate interfaces to computer systems?

2 marks

b. Identify the differences between formative evaluation **and** summative evaluation. *3 marks*

c. Describe in detail **three informal** evaluation methods employed in HCI and usability engineering. *15 marks*

d. Describe in detail **all** of the stages of a **formal** usability evaluation. *5 marks*

Question 4

Design & modelling (25 marks)

a. Why is it important to understand the **user's** mental model when designing interfaces?

10 marks

b. What are the advantages **and** disadvantages of interface metaphors? *3 marks*

c. Give examples of existing and potential metaphors for
   (i) Internet browsing tools *4 marks*
   (ii) e-shopping *4 marks*
   (iii) inter-office communications *4 marks*

Question 5

Design support & prototyping (25 marks)

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 *5 marks*
   (ii) design notations *5 marks*
   (iii) cognitive task analysis. *5 marks*

c. Describe the problems that designers may face when using **the above** tools and techniques.

2 marks

d. A control system is being designed to oversee an automated assembly plant. How could paper and pencil prototyping techniques such as sketches or storyboards be applied to the early design of the interface? *6 marks*

END OF EXAMINATION