2910315 Human–computer interaction

Examination paper: Zone A

Time allowed: two hours and fifteen minutes

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.

Question 1
Psychology

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. Detail the process and models of:

(i)	human short-term memory (STM)	3 marks
(ii)	human (LTM) long-term memory	4 marks

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

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

Question 2
Task Analysis

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 an HCI Task Analysis.   4 marks

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

(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

a. From an HCI viewpoint, why is it important to evaluate interfaces to computer systems?   *2 marks*

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

c. Detail **three** informal HCI or usability engineering evaluation methods.   *15 marks*

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

Question 4

Design & modeling

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

a. What is meant by **each** of the terms below?

   (i)   UIMS (User Interface Management System)   *1 mark*

   (ii)   UI (User Interface) Toolkit   *1 mark*

   (iii) Horizontal and vertical prototypes   *1 mark*

   (iv)   Rapid prototyping   *2 marks*

b. Describe the following techniques which can be used for prototyping user-interface designs. Give examples of **each**. Use diagrams and pictures to illustrate your answer.

   (i)   storyboards and design scenarios   *4 marks*

   (ii)   Wizard of Oz   *3 marks*

   (iii) throw-away prototypes   *3 marks*

c. When, and in which situations, might **each** of the above techniques be used? Use examples to support your answers.   *10 marks*