
2910315 Human–computer interaction

Examination paper: Zone B

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. What are the different characteristics associated with human **short term, sensory and long term** memory? 12 marks

Detail some implications for system design. 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.

- b. Distinguish between **recall** and **recognition**. 2 marks
- c. Discuss how supporting users' recognition processes - as opposed to memory recall - might contribute to improvements in system usability. 2 marks
- d. How would you design an interactive system to minimise **perceptual confusion** and **memory load**? 5 marks

Question 2

Design support

- a. Why is prototyping regarded as such an important part of user centred iterative design? 2 marks
- b. Describe the role of **each** of the following in obtaining user and task requirements in the context of user-centred design.
- (i) cognitive task analysis 4 marks
 - (ii) requirements analysis 4 marks
 - (iii) design notations 4 marks
- c. Draw up a table showing the advantages **and** disadvantages of **each** of the above tools or techniques. 9 marks
- d. Describe the problems designers face when using these techniques. 2 marks

Question 3*Design & modelling*

- a. Detail **all** of the following terms. Illustrate with examples, where possible:
- (i) mental model *5 marks*
 - (ii) user's model *5 marks*
 - (iii) designer's model *5 marks*
- b. Describe how a user develops his or her model of a computer system. *3 marks*
- c. How would you utilise mental models to develop a new interface metaphor for a map and information catalogue for a trade show? *7 marks*

Question 4*Evaluation*

- a. Detail, in full, the discount usability techniques of **heuristic evaluation** and **cognitive walkthrough**. *14 marks*
- b. Describe the advantages and disadvantages of **both** techniques. *6 marks*
- c. Identify the practical problems encountered in the use of **Cognitive Walkthrough**. How could you overcome such problems? *5 marks*

Question 5*Task Analysis*

- a. What is HCI Task Analysis and why is it used in HCI systems design? *3 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? *2 marks*
- c. Describe in full **two** different HCI Task Analysis techniques. Give suitable examples of **both**, using diagrams and **correct notations**. *15 marks*

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