

**THE BRITISH COMPUTER SOCIETY**

**THE BCS PROFESSIONAL EXAMINATIONS  
BCS Level 5 Diploma in IT**

**PRINCIPLES OF USER INTERFACE DESIGN**

24<sup>th</sup> April 2008, 10.00 a.m.-12.00 p.m.  
Answer FOUR questions out of SIX. All questions carry equal marks.  
Time: TWO hours.

*The marks given in brackets are **indicative** of the weight given to each part of the question.*

|   |
|---|
| Calculators are <b>NOT</b> allowed in this examination. |
|---|

1. As an HCI expert, you have been asked to carry out an expert evaluation of a small website selling designer sunglasses and tee-shirts. You choose to use a *structured walkthrough* in your evaluation.
  - a) Describe what is meant by the term *structured walkthrough*. **(4 marks)**
  - b) Design a *structured walkthrough* to evaluate each of the following aspects of the website:
    - (i) consistency; **(7 marks)**
    - (ii) navigation; and **(7 marks)**
    - (iii) functionality. **(7 marks)**
2. Designers of user interfaces need to use their knowledge of the characteristics and limitations of human memory to ensure that interfaces avoid or overcome problems arising from human memory characteristics or limitations.
  - a) Describe the main reasons why *short-term* or *working* component of human memory is often referred to as the “great bottleneck”. **(5 marks)**
  - b) Give **three** general design guidelines an interface designer could apply when designing menus to help overcome the short-term/working human memory bottleneck. **(6 marks)**
  - c) Classifying human memory (or knowledge) as either *declarative* or *procedural* is useful when considering user interface design.
    - i) Describe the differences between declarative and procedural memory and give an example of each. **(8 marks)**

**Turn over]**

- ii) Discuss why the differences between the two types are important in terms of human memory bottlenecks.

**(6 marks)**

3. You are hired as an HCI expert to oversee the design of a computer program which will integrate three existing programs that are used for different functions in a company. In such cases *tasks analysis* becomes an important focus. The original design documents for the three programs have been lost so you will have to work directly with existing users.

- a) Describe **two** suitable methods you could use to capture the tasks being performed using the three existing programs and discuss the advantages and disadvantages of each method.

**(12 marks)**

- b) Describe **three** important objectives of the *task identification* you will undertake.

**(6 marks)**

- c) Describe **two** suitable methods you could use for *task analysis* and discuss the differences between them.

**(7 marks)**

4. a) Describe **four** criteria which might be used to define any system as usable.

**(12 marks)**

- b) Accepted models of user-centred design comprise four main components.

- i) Describe these components.

**(8 marks)**

- ii) Describe how they relate to each other.

**(5 marks)**

5. Ethnographic approaches are often used in Usability Engineering to collect formative evaluation data to improve user interface design.

- a) What are the main characteristics of ethnographic approaches?

**(5 marks)**

- b) What are the main strengths and weaknesses of ethnographic approaches to collecting evaluation data?

**(10 marks)**

- c) Design an outline ethnographic study for collecting evaluation data for a new user interface that is intended for software programmers.

Your answer should address data collection, analysis and the role of the evaluator.

**(10 marks)**

6. Most modern Graphical User Interfaces (GUIs) are based on the *desktop metaphor* seen with operating systems such as Windows® and Mac OS®.
- a) What is meant by *desktop metaphor* in the context of user interfaces?  
**(5 marks)**
  - b) Describe the generally accepted rationale for the widespread use and success of the desktop metaphor in GUI operating systems.  
**(10 marks)**
  - c) Describe **two** limitations of the desktop metaphor for users of today's interactive systems.  
**(4 marks)**
  - d) Describe **two** similar metaphors in common use that extend beyond the desktop metaphor to address these limitations.  
**(6 marks)**