TECHNOLOGICAL UNIVERSITY DUBLIN
CITY CAMPUS - GRANGEGORMAN

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TU856 – BSc. (Honours) in Computer Science
TU857 – BSc. (Honours) in Computer Science (Infrastructure)

Year 2

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SEMESTER 2
EXAMINATIONS 2023/24

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Human Computer Interaction

Internal Examiners:
Dr. Emma Murphy and Dr. Art Sloan
Dr. Paul Doyle

External Examiners:
Ms. Sanita Tifentale
Dr. Charles Markham

Exam Duration: Two Hours

*Instructions: Answer **QUESTION 1** and **ANY TWO** questions of the remaining three available.*
Question 1** carries **40 marks** while **Questions (2), (3), and (4)** each carry **30 marks

1

1.

(a) Human Computer Interaction (HCI) can be described as 'interdisciplinary'. List any six disciplines associated with HCI.

(6 marks)

(b) Using the five human senses, describe four ways a user provides or receives information.

(4 marks)

(c) In relation to Human Computer Interaction (HCI) design, briefly describe a prototype.

(5 marks)

(d) What is Human Centred Design and what are the key principles of this design approach?

(10 marks)

(e) Define Universal Design and identify the three (3) primary factors influencing its implementation.

(10 marks)

(f) Briefly describe the Human Computer Interaction (HCI) principle of 'usability'.

(5 marks)

2. (a) Name and explain two age-related factors that affect the accessibility and usability of digital user interfaces.

(4 marks)

(b)
  i. What is a persona?

(3 marks)

  ii. What kinds of information might we include in a persona?

(5 marks)

(c) What are the pros and cons of personas?

(10 marks)

(d) Draw out four quadrants of an empathy map and explain how they can be used to translate user research into design ideas.

(8 marks)

3. (a) Explain the term, 'digital accessibility' in terms of design.

(5 marks)

(b) What is participatory design and how could it improve digital accessibility?

(8 marks)

(c) Describe the Think Aloud method for usability testing and identify why it would be challenging for a participant using a screen reader.

(8 marks)

(d) AIB bank would like to evaluate their mobile app with older users to identify any barriers or challenges that this age group may encounter. You have been asked to conduct a user research study within one month with a limited budget to cover travel costs for participants.
Referring to the details provided, describe how you will run your study using at least two types of user research.

(3 marks)

Further to this description, outline:
    i.   why you chose each method for the study including the type of data you will collect for each method,

(2 marks)

    ii.   A description of the practical measures you will take to record the data for each method,

(2 marks)

    iii.   any ethical considerations for collecting data for each method.

(2 marks)

4. (a) Explain the concept of Affordances in Human Computer Interaction Design.

(5 marks)

(b) What are Mental Models and why are they important for User Interface Design and Testing?

(7 marks)

(c) List and explain the four out of the five Gestalt Laws of perceptual organisation and describe how can they help us to design or redesign a visual interface.

(10 marks)

(d) Describe how you would conduct an expert Heuristic Usability Evaluation.

(8 marks)