



Semester I Examinations 2016/ 2017

Exam Code(s) 3BCT121; 3BA1; 4BA1
Exam(s) B.Sc. in Computer Science and Information Technology
B.A.

Module Code(s) CT318

Module(s) Human Computer Interaction

Paper No. 1
Repeat Paper

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Instructions: Candidates should answer **Question 1** and **any two other** questions.
All questions carry equal marks.

Duration 2 hours

No. of Pages 3

Requirements:

None

Release to Library: Yes

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No

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Q.1 You have been asked to design an interactive mobile *music learning environment* for children to support their development of effective music skills. The system must be appealing and fun to use, engage the children, and enable navigation by a variety of means (e.g. by topic, or through sequential lessons, or by activity).

The application must also store the children's details, greet them when they enter, store a record of their performance on various games and tasks, and recommend areas for further attention.

The company has indicated that they want an initial design submission from you to include the following:

- (a) A PACT analysis for this application. (6)
- (b) A paper prototype of three of the interface screens, representing the system's functional organisation and overall "look and feel". Clearly outline your rationale for each of the design choices you make (e.g. interaction styles). (9)
- (c) An evaluation plan for the system which will support comprehensive testing of your design, clearly outlining what activities, when, how and by whom the evaluation activities will be undertaken. (5)

Q. 2. (a) Design principles are intended to cover all interactive systems. Their generalisability is both their strength and weakness. Discuss the role of design principles in developing good interactive systems, illustrating your response with examples as appropriate. In your answer consider the use of these principles in all designs: how important is context in the application of these principles? (10)

(b) Since the advent of the Graphical User Interface (GUI), User Interface design has been overly reliant on vision as a means of communicating with users. Discuss the advantages and disadvantages of augmenting the User Interface with (a) **sound** and (b) **haptics**, illustrating your answer with specific examples. (6)

(c) Comment on the effective use of **metaphor** in interaction design, supporting your answer with examples as appropriate. (4)

Q.3 (a) Develop a **storyboard** showing the proposed use of a *SmartHome* “butler” service designed to support its user in the administration of their domestic environment (heat, lighting, groceries, laundry, electricity consumption, entertainment, maintenance activities, etc.). Comment on the efficacy of your proposed approach, the balance between automation and user control and its potential application.

(8)

(b) Successful HCI is heavily dependent on *evaluation*. You are keen to propose a more rigorous evaluation methodology for your organisation. Prepare a **memo** outlining the shortcomings of the traditional evaluation techniques deployed by your organisation (usability lab testing of prototype and final designs), and proposing the benefits of this new evaluation approach (including successful examples of its application in other contexts) to be presented to your company’s management team.

(6)

(c) Effective interaction design involves achieving a balance between *divergent* and *convergent* design thinking. *Laseau’s* Design Funnel clearly integrates these two processes. Using this funnel elaborate on the different activities involved during the elaboration and reduction design phases for the **Music Learning** mobile application described in Q.1 above.

(6)

Q.4 (a) Effective interaction design is ultimately about the correct assignment of responsibilities to the parties participating in the interaction, i.e. the human and the computer.

(i) From your study of the various theories, models, processes, and techniques of interaction design, comment on the validity of the above statement.

(6)

(ii) Discuss issues of the allocation of functions between people and software specifically in the context of a **Time Management** system for professionals.

(4)

(b) You have been tasked with developing a **mobile shopping app** (application). Outline the progression from Conceptual to Physical Design in this context, clearly identifying the inputs and outputs for each design phase.

(6)

(c) Elaborate the role of **prototyping** (both low and high fidelity) in improving the interaction experience of users using technology, illustrating your answer with examples when appropriate.

(4)