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UNIVERSITY OF COLOMBO, SRI LANKA



UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING

BACHELOR OF SCIENCE IN COMPUTER SCIENCE
BACHELOR OF SCIENCE HONOURS IN COMPUTER SCIENCE
BACHELOR OF SCIENCE HONOURS IN SOFTWARE ENGINEERING
BACHELOR OF SCIENCE IN INFORMATION SYSTEMS
BACHELOR OF SCIENCE HONOURS IN INFORMATION SYSTEMS



Third Year Examination – Semester I – 2021/2022

SCS3209 / IS3102 - Human Computer Interaction - (Part A)

TWO (2) HOURS

To be completed by the candidate

Examination Index No:

Important Instructions to candidates:

- The medium of instruction and questions is **English**.
- Note that questions appear on both sides of the paper.
If a page is not printed, please inform the supervisor immediately.
- This paper has **2 parts with 23** questions.
- Part A** of this paper has **20 MCQ type questions** (question no. 1-20) and **1 structured type question** (question no. 21) in **09 pages**.
- Part B** of this paper has **2 structured type questions** (22-23 questions) in **06 pages**.
- Answer ALL questions in Part A and Part B in English. Marks distribution with respect to questions:
 - 1-20 → 2 marks for each question
 - 21 → 20 marks for each question
- Any electronic device capable of storing and retrieving text including electronic dictionaries and mobile phones are **not allowed**.
- Calculators are **not allowed**.

For Examiner's use
only

Part A

Question No	Marks
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1 - 20	
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21	
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Total	
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Part A – 60 Marks

Instructions: For the following question numbers (1-20), circle the correct choice(s) in this question paper

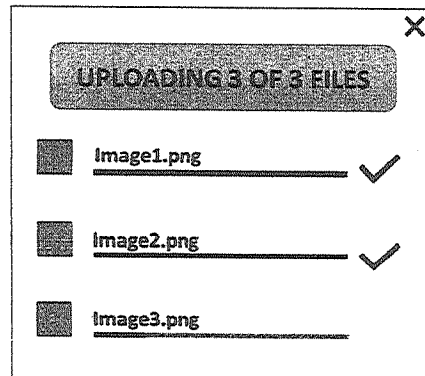
(1) What are the correct terms to complete the blank spaces in the following sentence?

Major components of HCI are _____, _____ and _____.

- (a). Human, Interface, Computer
 - (b). Human, Components, Interface
 - (c). Machine, Computer, Interface
 - (d). Interface, Human, System
 - (e). Human, Computer, Interaction
- (2) Which of the following describes the term 'Customization' regarding an interface of a device?
- (a). Use the devices to increase the productivity
 - (b). Change the device to use it easily to do the task
 - (c). Involves no effort from the user
 - (d). A single device to multiple tasks
 - (e). The device can be handled in different ways to do the same
- (3) Which of the following Keyboard layout(s) is/are biased towards right-handed users?
- (a). QWERTY
 - (b). Alphabetic
 - (c). Dvorak
 - (d). Virtual Keyboard
 - (e). T9
- (4) Which of the following is/are (an) advantage(s) of prototyping?
- (a). An operational prototype can be produced in weeks.
 - (b). System documentation is often absent or incomplete.
 - (c). Prototyping enables the early detection of errors.
 - (d). Formal end-of-phase reviews can be carried out.
 - (e). Security issues can be overlooked.

- (5) In the PACT framework, which of the following is/are (a) main feature(s) of an Activity component?
- (a) Financial aspects
 - (b) Safety-critical
 - (c) Complexity
 - (d) Temporal aspects
 - (e) Design aspects
- (6) During which phase of Design Thinking, would you analyze observations and synthesize them to ~~identify the core problem~~?
- (a). Empathize
 - (b). Define
 - (c). Ideate
 - (d). Prototype
 - (e). Test
- (7) Which of the following is/are (an) advantage(s) of Direct Manipulation?
- (a). Immediate feedback for user actions.
 - (b). High usage of system memory.
 - (c). Graphical User Interface is provided.
 - (d). Low graphical system requirements.
 - (e). The difference between the representation and the final product is minimal.
- (8) Which of the following is/are true for the Hierarchical navigation design?
- (a). Deep hierarchies are difficult to navigate.
 - (b). Miller's magic number is often misused in this context.
 - (c). It is good to design a hierarchy that designers can only understand.
 - (d). Alphabetic ordering of list items is not good to organize the items on the page.
 - (e). It is better to have broad-top level categories.
- (9) Which of the following is/are true about the Screen Design and layout?
- (a). Font style, text, and background colors can be used to emphasize the grouping.
 - (b). UI designer needs to consider the natural order of the items when designing the layouts.
 - (c). White spaces cannot be used to separate the blocks in the layout.
 - (d). Leaders can be used to make alignments between the columns.
 - (e). White spaces can be used to highlight the graphic in the layout.

- (10) Which of the following Usability Heuristics principle(s) does/do the following diagram best illustrates?



- (a). Flexibility and efficiency of use
 - (b). Recognition rather than recall
 - (c). Visibility of system status
 - (d). User control and freedom
 - (e). Consistency and standards
- (11) In the context of UCD, which of the following type(s) of users will occasionally use a product or use it through an intermediary?
- (a). Primary users
 - (b). Secondary Users
 - (c). Tertiary Users
 - (d). Front End-User
 - (e). Back End-User
- (12) Which of the following statement(s) is/are true regarding Card Sorting?
- (a). It is a method for suggesting intuitive structures
 - (b). It is usually used as an output to design.
 - (c). It is usually used as an input to design.
 - (d). It can be used to generate statistical data.
 - (e). It can be used to generate non-statistical data.
- (13) Which of the following Usability Design Principle(s) is/are concerned with Ease of Use?
- (a) Control
 - (b) Navigation
 - (c) Feedback
 - (d) Conviviality
 - (e) Familiarity

- (14) What is the correct term to fill the blank space of the following sentence?
_____ involves encouraging an invited group of intended/actual users of a system to share their thoughts, feelings, attitudes and ideas on a certain subject.
- (a) Usability testing
 - (b) Interview
 - (c) Focus group
 - (d) Card sorting
 - (e) Persona
- (15) What are the correct terms to complete the blank spaces in the following sentence?
_____ concerns with removing the barriers that would exclude some people from using the system whereas _____ is about fitting technologies into people's lives.
- (a). Acceptability, accessibility
 - (b). Accessibility, acceptability
 - (c). Acceptability, usability
 - (d). Usability, accessibility
 - (e). Usability, acceptability
- (16) Which of the following is correct regarding the stages of the Design Thinking process?
- (a). Understand > Draw > Ideate > Create > Test
 - (b). Empathize > Design > Implement > Produce > Test
 - (c). Understand > Define > Ideate > Produce > Try
 - (d). Empathize > Define > Ideate > Prototype > Test
 - (e). Empathize > Define > Ideate > Produce > Test
- (17) Which of the following is/are true regarding Evaluation in the context of HCI?
- (a). Evaluation should be considered at all stages in the design life cycle.
 - (b). Cognitive Walkthrough is usually performed by experts in cognitive psychology.
 - (c). In Think Aloud evaluation, a user is asked to describe what he is doing, why, and what he thinks is happening.
 - (d). Cooperative evaluation is not a variation of the Think Aloud evaluation.
 - (e). Post-task walkthrough is necessary in cases where Think Aloud is not possible.

- (18) Which of the following is/are true with respect to Task Analysis?
- (a). A task is defined in terms of the user not the system.
 - (b). Task Analysis contributes to identify system requirements.
 - (c). Observation is not the main tool of Task Analysis.
 - (d). Cognitive Task Analysis focused on the procedural knowledge needed to achieve a goal.
 - (e). Structural Knowledge based Analysis is not good for problem-solving.

- (19) Select the appropriate option below, in relation to the following 3 statements regarding Human Errors.

- I. Slips occur due to unconscious behavior.
- II. Mistakes occur through conscious deliberation.
- III. Mistakes are unavoidable in many situations.

- (a) Only I is correct
 - (b) Only III is correct
 - (c) Only II and III are correct
 - (d) Only I and II are correct
 - (e) All three statements are correct
- (20) The following two groups A and B are related to 5Es of Usability. Select the correct matching between items in group A with appropriate ones in group B.

Group A	Group B
A1. Effective	B1. How well the product prevents errors and helps users recover from any errors that do occur.
A2. Efficient	B2. How well the product supports both initial orientation and deeper learning.
A3. Engaging	B3. Software is useful and helps users achieve their goals accurately.
A4. Error tolerant	B4. The speed with which work can be done.
A5. Easy to learn	B5. How pleasant, satisfying, or interesting an interface is to use.

- (a) A1→B3, A2→B4, A3→B5, A4→B1, A5→B2
- (b) A1→B5, A2→B1, A3→B3, A4→B4, A5→B2
- (c) A1→B5, A2→B4, A3→B3, A4→B2, A5→B1
- (d) A1→B4, A2→B1, A3→B5, A4→B3, A5→B2
- (e) A1→B2, A2→B3, A3→B1, A4→B4, A5→B5

Instructions: For question no 21, provide your answers within the space provided.

21.

(a) Write down three (03) advantages of Metaphors when designing User Interfaces.

[3 Marks]

(b) Write down two (02) disadvantages of Metaphors when designing User Interfaces.

[2 Marks]

(c) Describe what is meant by “Ubiquitous Computing”.

[4 Marks]

(d) Write down the five (05) tools UI designers use when designing Screens and Layouts.

[5 Marks]

(e) “Prototyping is an example of what is known as a hill-climbing approach.” Write the two (02) things that need to consider to succeed using the Prototyping method.

[4 Marks]

- (f) Describe two (02) disadvantages of Laboratory Studies in the context of the UCD evaluation.

[2 Marks]

