



**RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES**

**B.Sc. (General) Degree in Information and Communication Technology
Third Year - Semester II Examination – February/March 2019**

ICT 3301 – HUMAN COMPUTER INTERACTION

Time: Three (3) hours

INSTRUCTIONS TO CANDIDATES

- This is a closed book examination.
 - The paper consists of FOUR (4) pages including this page.
 - The paper contains FIVE (5) questions. **Answer ALL Questions.**
 - This examination accounts for 70% of the course assessment. The total maximum mark attainable is 100. The marks assigned for each question and section, thereof are indicated in brackets.
 - Mobile phones or any other communication devices are not permitted.
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1.

- a) HCI is a subject of multidisciplinary. Discuss why we need to consider many disciplines. **(4 marks)**
- b) "Fitts' law is used to understand the efficiency of a pointing action of an object on a screen." Discuss this statement. **(4 marks)**
- c) Explain with an example the concept of 'semantic network' with respect to a way of information storing in long term memory. **(6 marks)**
- d) "Individual differences of humans affect the way they interact with a computer system". Justify this statement with three examples. **(6 marks)**

Total: (20 marks)

2.

- a) Explain with three examples the factors to be considered under computer ergonomics when designing interactive systems. **(3 marks)**
- b) Computer interaction is everywhere. However in order to optimize the interaction we have to take into account several aspects such as kind of users involved, type of activity being supported, and the context of use. Briefly explain this scenario by illustrating making a phone call using a public phone box and a cell phone. **(6 marks)**
- c) Discuss universal designing with respect to interactive system development. What are the factors to be considered when you are developing a universally accessible system? **(5 marks)**
- d) "Emotions may affect the interaction between users and computer systems." Suggest your ideas on how to improve your system for effective interaction by justifying the above statement. **(6 marks)**

Total: (20 marks)

3.

- a) Assume that you have a graphic package installed on your computer and you want to design a logo using that package. Explain the interaction between you and the computer in this process according to the Norman interaction model. **(7 marks)**

- b) What is a conceptual model? What happens if the user's conceptual model does not match the designer's conceptual model? **(4 marks)**
- c) Briefly explain how you would improve the learnability of your system for a novice user. **(4 marks)**
- d) User interface design often centers on identifying an appropriate abstraction for an underlying computer system. For example, the waste-paper basket on the desktop of most operating systems provides an abstraction of the delete function. What are the dangers associated with hiding the underlying complexity of computer systems in this way? **(5 marks)**

Total: (20 marks)

4.

- a) Explain how the terms Anthropomorphism and Zoomorphism engage in interactive system design. **(4 marks)**
- b) Mention three example applications where the social interactions are going on the computer based systems. Criticize how the interactions in such systems differ from normal user communication. **(6 marks)**
- c) "Agile software development process is the best way to integrate user-centered design and conventional software development process." Discuss this statement. **(4 marks)**
- d) Suppose you have to build an e-commerce web site which facilitates customers to buy multiple goods. There should be a virtual agent who supports the customer to find the items based on their voice commands. As a designer of such system, describe what important factors you should consider when designing the interface. **(6 marks)**

Total: (20 marks)

5.

- a) You have been asked to arrange an experiment to evaluate the implementation of your system. Describe the factors to be considered and how you are going to arrange your experiment. **(3 marks)**
- b) Compare and contrast the command line interface and WIMP interface by highlighting two advantages and disadvantages of each. **(4 marks)**

- c) Most mobile phones in the market are not designed for elderly people to use. You are asked to design one for elderly users who are over 70 to be able to use easily.
- i. How will you start? What kind of methods will you use for requirement analysis? Why? **(3 marks)**
 - ii. After the requirement analysis, you made some paper prototype and will evaluate the usability aspect of your design. What kind of methods would you like to use? Why? **(5 marks)**
 - iii. Assume that your design has been accepted by a particular company and they made a first full scale prototype and would like you to make the usability evaluation before the mass production is started. How would you like to perform the usability evaluation? Why? **(5 marks)**

Total: (20 marks)

END