



SABARAGAMUWA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES

010

DEPARTMENT OF COMPUTING & INFORMATION SYSTEMS
BSc DEGREE PROGRAMME IN COMPUTING AND INFORMATION SYSTEMS
YEAR I SEMESTER II EXAMINATION SEP/ OCT 2022

IS 12212 - Human Computer Interaction

Time allowed: **Three (03) Hours**

INSTRUCTIONS TO CANDIDATES:

- This paper consists of FIVE (05) questions. Answer ALL Questions.**
- The marks given in brackets are indicative of the weight given to each part of the question.**
- Write your Index No clearly in all places where appropriate.**
- Write clearly in English and use BLUE ink.**
- Non-programmable calculators are NOT ALLOWED in this examination.**
- No clarifications will be provided on the given questions.**
- Strike a line through all unused pages in the answer booklet/sheets.**
- Cross out all scratch paper and hand in at the time of collection.**

- 1 a) What is meant by **Human-Computer Interaction**? [10 marks]
- b) State **three (03)** types of memory functions and briefly explain them. [30 marks]
- c) Distinguish between the error types: slips and errors. [10 marks]
- d) State **three (03)** issues that can occur in when using each of the following interaction styles. [20 marks]
- I. Face Recognition
 - II. Speech Recognition
- e) Write short notes on the following display types. [30 marks]
- I. Gas Plasma Displays
 - II. Random Scan Displays
 - III. Direct View Storage Tube
- 2 a) Explain the **Execution-Evaluation Cycle** using Donald Norman's Model. [30 marks]
- b) Differentiate **Gulfs of execution** and **Gulfs of evaluation**. [10 marks]
- c) Name **five (05)** types of interaction styles. [10 marks]
- d) Briefly explain the **main elements of WIMP Interfaces**. [40 marks]
- e) What are the **five (05)** factors that need to be considered while designing a menu? [10 marks]
- 3 a) Briefly explain the **steps of the design process**. [20 marks]
- b) State the **four (04)** golden rules of interaction design. [10 marks]
- c) Briefly explain main **three (03)** principles that support usability. [30 marks]

- d) State **Neilsen's Ten (10) Heuristics**. [20 marks]
- c) What is **X window system**? Explain. [20 marks]
- 4 a) What are the **three (03)** main goals of evaluation? [10 marks]
- b) **Laboratory studies** and **field studies** are evaluation methods that the users take part. Briefly explain them by discussing their advantages and disadvantages. [30 marks]
- c) Popular way to gather information about actual use of the system is to observe user interaction with it. What are the **techniques used to evaluate system by observing user behavior**? Briefly explain them. [40 marks]
- d) Briefly explain **multi-modal interaction** using a suitable example. [20 marks]
5. A modern hotel has installed a sandwich-making robot to supply room service sandwiches at any hour of the day. The hotel also has an automated delivery system that will take the completed sandwich to a specified room. You have been asked to program a software agent interface that guests can phone to order sandwiches.
- a) Write a short scenario describing how a guest would order a sandwich using your interface. [40 marks]
- b) Would you use a voice recognition system or ask the user to push phone buttons to enter responses? Explain the relative advantages and disadvantages of each for this situation. [30 marks]
- c) Do you think the agent should be programmed with a distinct personality? Explain why or why not. [30 marks]