Question Paper

Exam Date & Time: 27-Dec-2022 (02:30 PM - 05:30 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

SEVENTH SEMESTER B.TECH MAKEUP EXAMINATIONS, DEC 2022

Human Computer Interaction [ICT 4049]

Α

Marks: 50

Duration: 180 mins.

(3)

(5)

Answer all the questions.

Instructions to Candidates: Answer ALL questions Missing data may be suitably assumed

- 1) RakshaBandhan is a popular festival in India that honours the special bond between siblings. On this (5) day, sisters of all ages tie a talisman or amulet called the Rakhi around the wrists of their brothers.
 A) They symbolically protect them, receive a gift in return, and traditionally invest the brothers with a
 - share of the responsibility of their potential care.

Due to globalization, siblings tend not to be physically around each other during this festival. Devise a virtual solution for siblings to celebrate Rakshabandhan. Highlight the flow of activities and interaction with a diagram. Identify six unique features of this social context and compare your virtual solution to the actual experience.

For example, one feature could be:

Feature	Physical Event	Virtual Solution
Festive mood	Song played on	App plays
setting	speakers	music

- B) Contrast the human memory model with the computer memory architecture.
- C) With examples, name the various elements that affect the interaction of a human with a computer (2) system.
- Skeuomorphism is the design concept of making items represented resemble their real-world counterparts.
 Skeuomorphism is commonly used in many design fields, including user interface (UI) and Web design,
 - architecture, ceramics and interior design. It contrasts with flat design, a simpler graphic style. Over time, skeuomorphic elements have been replaced with flat design elements. Icon styles of Instagram are represented in Figure below that demonstrate the difference.





Skeuomorphism

Flat design

Figure: Icon Style Evolution of Instagram

a. Assess the strengths and weaknesses of each graphic style in UI and interface design for users in general.

b. Seniors find icons without text especially hard to recall. The shift in UI design of an email app from skeuomorphic to flat has affected the senior citizens who use the app. They find it difficult to use the app they once recognized. They do not know processes younger people were born doing, such as using a plus sign to compose an email or a paper plane to send it. As a designer, come up with concrete steps to the flat design email app more accessible to senior users?

- B) Explain three problems which are getting faced by users with cognitive impairments and learning (3) disabilities. What could you consider to ensure that your interface design supports those impairments and disabilities?
- C) What are the types of user support that could be provided to the user for SLCM application? (2)
- Analyze the sequence of interactions to create new word file ans save it in MS Word Application using (5)
 GOMS. List out all the necessary actions and use them to
 - A) Construct the formula that would calculate the amount of time necessary to complete the actions for creating a file and saving it. Treat the person's finger pressing the screen the same way you would handle a mouse. (Assume the following variable names, represent the time required to do each action.)
 - p point to an area on the screen
 - b press a button (physical or virtual)
 - h home the hand on a position on the screen
 - d draw a straight line on the screen using a finger
 - k open keyboard
 - c type one character
 - m mentally preparing for executing physical actions
 - B) Write and justify which User Interface pattern is more suitable for following contexts.

There's too much stuff to be shown on the page, but some of it isn't very important. You would rather

have a simpler LIL but you have to put all this content somewhere.

(3)

nave a simpler of, but you have to put all this content somewhere

The application or site has a straightforward tree structure, without much interlinking among the tree elements. Users work their way up and down this tree, either via direct navigation or searching.

The input format expected by your program is familiar and well-defined, and your program don't expect any users to need to deviate from the format you expect.

- C) Describe two problems of 'post-task walkthroughs' evaluation technique with suitable examples. (2)
- 4) How will you incorporate user-centered design process in software development life cycle phases? (5) Explain with a suitable example how to use persona, scenario and cultural probe in designing user-centric interactive system.
 (5) Explain with a suitable example how to use persona, scenario and cultural probe in designing user-centric interactive system.
 - B) Choose an appropriate evaluation method for each of the following situations. In each case identify (3) the: (i) The participants. (ii) The technique used. (iii) Representative tasks to be examined. (iv) Measurements that would be appropriate. (v) An outline plan for carrying out the evaluation.
 - (a) You have developed a group decision support system for a solicitor's office.

(b) You have been asked to develop a system to store and manage student exam results and would like to test two different designs prior to implementation or prototyping.

(c) You have prototype for online shopping system to be used by clients to add the items in the cart and smooth completion of payment process.

- C) What are the limitations of everyday augmented reality. Medical surgeon who needs to perform very (2) precise operation can practice without being present during an emergency. Justify which category of the reality environment will be more suitable.
- A particular publisher would like to study how the text style, size and line space affect people's (5) reading speed. Their books cover a big range of reader population from school children to elderly people. A lab experiment was carried out. The experimenters selected 3 different text styles, 4 different text sizes and 3 different line spaces to test. They divided the readers' age into four groups, 9 to 12, 20 to 40, 50 to 60 and 70 to 80. They got 8 subjects from each age group to participate in the study. The same length of texts (but with different stories) for each group were printed with different styles, text sizes and line spaces according to the test conditions and asked each subject to read them and their reading speed was recorded. For the given scenario, answer the following questions.
 - i) What are the hypotheses for this study?
 - ii). What are the independent variables and dependent variables?

iii) In this study, they used mixed within-group (subject) design and between-group (subject) design. Which part is within-subject design and which part is between-subject design?

iv) Write the analysis of each design mentioned in the (iii).

- B) Explain with suitable example, how extended matrix of CSCW is significant to understand the (3) unpredictable time and unpredictable place. Differentiate the example with another suitable example of predictable time and predictable place.
- C) You are planning to design RFID based attendance capturing system for our college. Identify the (2) suitable enablers which will make this system an example of ubiquitous computing.

-----End-----