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Question Paper Code: 97C05

B.E./B.Tech. DEGREE EXAMINATION, APRIL 2024

Seventh Semester

Computer Science and Business Systems

19UCB705 - USABILITY DESIGN OF SOFTWARE APPLICATIONS

(Regulations 2019)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. Explain the fundamental difference between Human Factors Engineering and User Experience Design in the context of HCI. CO1-U
2. How does virtual reality (VR) technology differ from augmented reality (AR)? CO1-U
3. Give an example of a context-aware user interface and how it adapts to different situations. CO1-U
4. How does context-awareness enhance user experience in modern interfaces? CO1-U
5. What are Norman's Seven Principles of design? CO1-U
6. Explain the role of feedback in interaction models. CO1-U
7. Define information visualization CO1-U
8. What is the significance of the principle of "Affordances" in design? CO1-U
9. How can Nielsen's heuristic principle help in the design of e-commerce websites? CO1-U
10. Define Nielsen's Heuristic Principles. CO1-U

PART – B (5 x 16= 80 Marks)

11. (a) How can HCI principles be integrated into medical devices and healthcare systems to enhance usability and minimize errors in critical situations? CO1- U (16)
- Or
- (b) Explain the significance of HCI in the design of user-friendly business software and applications. Discuss the impact of good HCI design on employee productivity and satisfaction. CO1- U (16)

12. (a) Provide examples of how GOMS has been applied in industry to improve usability in software or product design. Discuss the specific benefits that organizations have realized by adopting GOMS-based approaches. CO2- App (16)
- Or
- (b) Develop a GOMS-based analysis for a commonly used software application (e.g., a word processing program or a smartphone app) and propose specific design changes based on your analysis to enhance its usability. CO2- App (16)
13. (a) Discuss in details about Software Engineering aspects of HCI. CO1- U (16)
- Or
- (b) Define information visualization and outline the fundamental principles that guide the effective design of visual representations for data. Provide examples of visualizations that adhere to these principles and explain their success. CO1- U (16)
14. (a) Provide examples of how the principles outlined in "The Design of Everyday Things" can be applied to improve the usability of common consumer products, such as smartphones or kitchen appliances. CO2- App (16)
- Or
- (b) Apply the ergonomics principles to the design of virtual reality (VR) and augmented reality (AR) interfaces? What challenges arise in ensuring comfortable and safe interactions in these immersive environments? CO2- App (16)
15. (a) Explain Nielsen's Ten Heuristic Principles for usability evaluation. Provide an example for each heuristic and discuss how they can help improve the usability of a website or application. CO2- App (16)
- Or
- (b) Explain the concept of controlled psychologically oriented experiments in the context of usability research. Provide a step-by-step outline of how you would design and conduct such an experiment to evaluate the effectiveness of error messages in reducing user frustration during a web browsing task. CO2- App (16)