Q.6 Attempt any two:

i. How does the environment of use influence design decisions during the project lifecycle? **5**

ii. How can the principles of design thinking be applied to develop innovative solutions for enhancing public transportation systems? **5**

iii. Evaluate the strengths and weaknesses of using user interviews as a research technique in the project design process. Provide example. **5**

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Total No. of Questions: 6 *Total No. of Printed Pages:4*

Enrollment No.....

Faculty of Engineering

End Sem Examination May-2024

CB3CO29 Usability Design of Software Applications

Programme: B.Tech. Branch/Specialisation: CSBS

Duration: 3 Hrs. **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d. Assume suitable data if necessary. Notations and symbols have their usual meaning.

Q.1 i. In user-centered design, what does the term "Iterative design" refer to? **1**

(a) Designing without user feedback
(b) Continuous improvement based on user testing and feedback
(c) Implementing design decisions without revisions
(d) Static design approach without flexibility

ii. Which term describes the process of making software accessible to users with disabilities? **1**

(a) User-centered design (b) Adaptive design
(c) Inclusive design (d) Assistive technology

iii. Which aspect of User-Centered Design involves assessing how well a product meets the needs and preferences of its target users? **1**

(a) User testing (b) Prototyping
(c) User personas (d) Usability testing

iv. What is the significance of evaluating a product's ease of use in user-centered design? **1**

(a) To ensure the product is visually appealing
(b) To verify if the product meets technical specifications
(c) To assess how intuitive the product is for users
(d) To analyze market trends

v. Which heuristic principle focuses on consistency and standards in interface design? **1**

(a) Visibility of system status
(b) Match between system and the real world
(c) Consistency and standards
(d) Error prevention

vi. How would you recommend addressing a usability issue with the "Visibility of system status" heuristic principle rated as high severity? **1**
(a) Implement progress indicators to provide feedback on user actions
(b) Improve error messages to guide users in correcting mistakes
(c) Increase the contrast between interactive elements and background
(d) Add tooltips to explain complex features or terms

vii. Explain the difference between qualitative and quantitative data in an empirical usability study. **1**
(a) Qualitative data provides numerical measurements, while quantitative data describes observations and insights
(b) Qualitative data focuses on user opinions, while quantitative data measures specific user behaviors
(c) Qualitative data includes surveys and questionnaires, while quantitative data involves usability metrics and task completion times
(d) Qualitative data is collected through experiments, while quantitative data relies on interviews and focus groups

viii. What is the purpose of selecting a control group in experimental design? **1**
(a) To compare the experimental group's performance to a baseline
(b) To introduce bias into the study
(c) To limit the number of participants
(d) To ensure randomization of participants

ix. How would you apply design thinking techniques during the discovery phase of a group project? **1**
(a) By conducting user interviews to gather insights and empathy
(b) By creating personas to represent target users
(c) By developing wireframes for potential design solutions
(d) By conducting usability testing on existing products

x. What is the purpose of conducting environmental analysis in the context of UX design? **1**
(a) To understand the technological constraints of the project
(b) To identify potential opportunities and threats that may impact the project
(c) To gather user feedback on existing products
(d) To develop personas representing different user groups

Q.2 i. Define User-Centered Design (UCD) and explain its importance in software development. **2**
ii. Explain how usability testing differs from user acceptance testing (UAT) in software development. **3**
iii. Develop a usability testing plan for a mobile banking app, outlining the objectives and methodologies. **5**
OR iv. Elaborate on the difficulties and advantages involved in the creation of user interfaces designed for wearable technology. Provide examples to support your analysis. **5**

Q.3 i. Describe two key principles of user-centered design and their importance in product development. **2**
ii. Explain the importance of conducting user testing with representative users in evaluating a product's usability and user experience. **8**
OR iii. Develop a user scenario for a travel planning app, outlining the user's goals, actions, and interactions with the app's interface. Apply user-centered design principles to ensure the scenario aligns with user needs and preferences. **8**

Q.4 i. Explain how the visibility of system status heuristic principle relates to providing feedback to users in interface design. **3**
ii. Explain the difference between high, medium, and low severity usability issues in terms of their potential impact on user satisfaction and task completion. **7**
OR iii. Discuss how the flexibility and efficiency of use heuristic principle can be applied to optimize the user interface of a productivity app for both novice and expert users. **7**

Q.5 i. What is experimental design? How does it relate to usability studies? **4**
ii. Explain how the independent and dependent variables are interconnected in the hypothesis of a usability study. **6**
OR iii. What are the strengths and weaknesses of the sampling strategy used in a usability study? How do these affect the interpretation of the study's results? **6**

Marking Scheme

CB3CO29 (T) Usability Design of Software Applications

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Q.1	i)	B	**1**
	ii)	C	**1**
	iii)	D	**1**
	iv)	C	**1**
	v)	C	**1**
	vi)	A	**1**
	vii)	B	**1**
	viii)	A	**1**
	ix)	A	**1**
	x)	B	**1**
Q.2	i.	Define – 1 Mark, Explain- 1	**2**
	ii.	Explain 3 Marks	**3**
	iii.	Testing Plan- 3 Marks, Method 2 Marks	**5**
OR	iv.	Difficult 2.5 Marks, Advantage 2.5 Marks	**5**
Q.3	i.	Describe 2 Marks	**2**
	ii.	Explain- 8 Marks	**8**
OR	iii.	Scenario 4 Marks Design 4 Marks	**8**
Q.4	i.	Explain- 3 Marks	**3**
	ii.	Difference (7 Marks) Min. 5	**7**
OR	iii.	Explain- Flexibility 3.5 Marks Efficiency 3.5 Marks	**7**
Q.5	i.	Define-2 Marks, Usability -2 Marks	**4**
	ii.	Explain- 6 Marks	**6**
OR	iii.	Strength 3 Marks, Weakness 3 Marks	**6**
Q.6			
	i.	Explain- 5 Marks	**5**
	ii.	Explain- 5 Marks	**5**
	iii.	Strength 2 Marks, Weakness 3 Marks	**5**