

DHANALAKSHMI SRINIVASAN ENGINEERING COLLEGE

(AUTONOMOUS)

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PERAMBALUR - 621 212. Tamil Nadu.

website : www.dsengg.ac.in



DEPARTMENT OF INFORMATION TECHNOLOGY

QUESTION BANK

VIII SEMESTER

U20IT851 – Human Computer Interaction

Regulation – 2020

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Prepared by

QUESTION BANK

SUBJECT : U20IT851 – HUMAN COMPUTER INTERACTION

SEM/YEAR : VIII/IV

UNIT I - FOUNDATIONS OF HCI			
The Human: I/O channels – Memory – Reasoning and problem solving; The computer: Devices – Memory – processing and networks; Interaction: Models – frameworks – Ergonomics – styles – elements – interactivity- Paradigms-Case Studies			
PART-A			
Q.No	Questions	BT Level	Competence
1	Define Human Computer Interaction.	BTL -1	Remember
2	What are mental models and why are they important in interface design?	BTL -1	Remember
3	What are the two types of photoreceptor.	BTL -1	Remember
4	What is visual angle? How the visual angle is calculated?	BTL -1	Remember
5	What is iconic memory?	BTL -1	Remember
6	What type of HCI paradigm could be used to monitor eruptions of active and hazardous volcanoes?	BTL -2	Understand
7	Write the three types of memory or memory function.	BTL -1	Remember
8	Define Reasoning. List its types.	BTL -1	Remember
9	What are the text entry devices.	BTL -1	Remember
10	Point out distribution of practice effect.	BTL -2	Understand
11	Classify the two main theories of forgetting	BTL -2	Understand
12	Define productive and reproductive problem solving.	BTL -1	Remember
13	Show ACT model.	BTL -2	Understand
14	How does the spreading activation affect the interferences effects during information recall from memory.	BTL -2	Understand
15	Give the Models of interaction.	BTL -1	Remember
16	What is Ergonomics?	BTL -1	Remember
17	Conclude the factors in the physical environment that directly affect the quality of the interaction and the user's performance.	BTL -2	Understand
18	Give the use of scroll bars and title bars.	BTL -1	Remember
19	Tabulate direct manipulation vs indirect manipulation.	BTL -2	Understand
20	Give the importance of grouping controls.	BTL -2	Understand
PART-B			
1	i) List Input and Output channels and discuss briefly about it. ii) Draw the model of the structure of human memory with diagrammatic illustration.	7 6	BTL -1 Remember
2	i) Briefly discuss about the types of memory in detail. ii) Describe five important differences between Short Term Memory and Long Term Memory.	7 6	BTL -2 Understand
3	i) Illustrate the similarities and differences in human memory and		

	computer memory. ii) Classify mental models, and why are they important in interface design?	7 6	BTL -3	Apply
4.	Differentiate deductive reasoning, inductive reasoning and abductive reasoning.	13	BTL -2	Understand
5	i) Describe the guidelines for data display and data entry. ii) State requirements to perform cognitive walkthrough of a system.	7 6	BTL -1	Understand
6	Examine in detail about the following: (i) Digital paper. (ii) Display devices.	7 6	BTL -1	Remember
7	Demonstrate how the system designer can minimize the memory load of the user.	13	BTL -3	Apply
8	i) Discuss the factors that can limit the speed of an interactive computer system. ii) Draw the block diagram representing human-computer interaction framework and explain it.	7 6	BTL -2	Understand
9	Compose the stages of Norman's model of interaction and justify it with an example.	13	BTL -3	Apply
10	Briefly describe about the elements of the WIMP interface with example.	13	BTL -3	Apply
11	Explain the various types of users and the organizational issues to be considered in designing an interactive system with examples.	13	BTL -3	Apply
12	i)How the user performance is improved using ergonomics? Explain. ii)Point out briefly four different interaction styles used to accommodate the dialog between user and computer.	7 6	BTL -3	Apply
13	i)Examine (in words as well as graphically) the interaction framework introduced in Human-Computer Interaction. ii) Show how it can be used to explain problems in the dialog between a user and a computer.	7 6	BTL -2	Understand
14	Analyze briefly four different interaction styles used to accommodate the dialog between user and computer and finalize it for an application.	13	BTL -4	Analyze
PART C				
1	Integrate the ideas of how new, fast, high-density memory devices and quick processors have influenced recent developments in HCI? Do they make systems any easier to use? Do they expand the range of applications of computer systems?	15	BTL -3	Apply
2	What input and output devices would you use for the following systems? For each, compare and contrast alternatives, and if appropriate indicate why the conventional keyboard, mouse and c.r.t	15	BTL -3	Apply
	screen may be less suitable. a) portable word processor b) tourist information system c) tractor-mounted crop-spraying controller d) air traffic control system e) worldwide personal communications system f) digital cartographic system			

3	Choose two of the interaction styles that you have experience of using. Use the interaction framework to analyze the interaction involved in using these interface styles for a database selection Task. Which of the distances is greatest in each case?	15	BTL -3	Apply
4	What influence does the social environment in which you work have on your interaction with the computer? What effect does the organization (commercial or academic) to which you belong have on the interaction? Prepare answer for this with an example.	15	BTL -3	Apply
UNIT II - DESIGN & SOFTWARE PROCESS				
Interactive Design basics – process – scenarios – navigation – screen design – Iteration and Prototyping. HCI in software process – software life cycle – usability engineering – Prototyping in practice – design rationale. Design rules – principles, standards, guidelines, rules. Evaluation Techniques – Universal Design.				
PART A				
1	What is design? List out the design process.		BTL -1	Remember
2	State the golden rule of design.		BTL -1	Remember
3	Give a model of Interaction design process.		BTL -2	Understand
4	Show the three main goals of Evaluation.		BTL -1	Remember
5	What are the possible ways to set measurement levels in a usability specification?		BTL -1	Remember
6	Compare the Levels of interaction.		BTL -2	Understand
7	Summarize the different implications of navigation design.		BTL -2	Understand
8	Define localization or internationalization.		BTL -1	Remember
9	Compare formative evaluation vs summative evaluation.		BTL -2	Understand
10	Do you think that prototyping will solve all problems associated with user interfaces design?		BTL -2	Understand
11	What are the advantages and disadvantages of Prototyping Model?		BTL -2	Understand
12	What are the three main approaches to prototyping.		BTL -2	Understand
13	Illustrate UIMS.		BTL -2	Understand
14	Show the warning about iterative design.		BTL -1	Remember
15	Write down the three categories of the principles to support usability.		BTL -1	Remember
16	Discuss on the usage of colors in emergency response panels.		BTL -2	Understand
17	Compare Efficiency & Satisfaction.		BTL -2	Understand
18	Summarize the basic categories of the Smith and Mosier guidelines.		BTL -2	Understand
19	Define multithreading.		BTL -1	Remember
20	Point out universal design.		BTL -2	Understand
PART-B				
1	With a neat sketch, describe about Interaction design process and golden rule of Design.	13	BTL -2	Understand
2	Explain an example of a scenario for the personal movie player. Draw the block diagram of application functional hierarchy and Explain.	7 6	BTL -3	Apply
3	i) Illustrate about Navigation design through Levels of Interaction and Screen design ii) What is known as a hill-climbing approach? Explain.	7 6	BTL -3	Apply

4	Express the use of layout and other elements in the control panels.	13	BTL -2	Understand
5	Explain in detail about the activities in the waterfall model and spiral model of the software life cycle with an example.	13	BTL -3	Apply
6	i) Describe the principles of good UI design. ii) Using the tour booking form as an example, try to relate its suitability for automation.	7 6	BTL -2	Understand
7	Summarize some of the techniques that are available for producing rapid prototypes.	13	BTL -2	Understand
8	i) List and describe the activities in the life cycle. ii) Briefly discuss about the three main approaches to prototyping.	7 6	BTL -2	Understand
9	i) Examine the principles affecting learnability in detail. ii) Give the summary of principles affecting flexibility in detail.	7 6	BTL -2	Understand
10	Consider the following usability objective. Theatre booking clerks with low motivation, no computing experience and no previous training, working in a small and hectic box office, are able to learn to reserve or book seats within a one hour period. Demonstrate what measures could be taken and which techniques would you consider appropriate to test whether this objective was met?	13	BTL -3	Apply
11	i) Mention and Explain the Shneiderman's Eight Golden Rules of Interface Design. ii) State and Explain Norman's Seven Principles for Transforming Difficult Tasks into Simple Ones.	7 6	BTL -2	Understand
12	i) With help of Norman's Model of interaction, Examine the process of execution evaluation cycle. ii) Define gulf of execution and gulf of evaluation with respect to this model?	7 6	BTL -2	Understand
13	i) List and discuss seven stages of action model. ii) What are the seven principles give us a good starting point in considering universal design.	7 6	BTL -2	Understand
14	Develop a short notes on a) Cognitive walkthrough. b) Speech-based system is the phonetic typewriter.	7 6	BTL -2	Understand
PART C				
1	Provide a usability specification for an electronic meetings diary or calendar. First identify some of the tasks that would be performed by a user trying to keep track of future meetings, and then complete the usability specification assuming that the electronic system will be replacing a paper-based system. What assumptions do you have to make about the user and the electronic diary in order to create a reasonable usability specification?	15	BTL -3	Apply
2	What is the distinction between a process-oriented and a structure-oriented design rationale technique? Would you classify psychological design rationale as process- or structure-oriented? Justify.	15	BTL -3	Apply
3	Using the web design pattern language produce a design for an e-commerce site for a small retail business. How well does the language support the design process? Explain in detail	15	BTL -3	Apply

4	You have been asked to compare user performance and preferences with two different learning systems, one using hypermedia, and the other sequential lessons. Design a questionnaire to find out what the users think of the system. How would you go about comparing user Performance with these two systems?	15	BTL -3	Apply
UNIT III - MODELS AND THEORIES				
HCI models: Cognitive models –Socio-Organizational issues and stake holder requirements – Communication and collaboration models-Hypertext, Multimedia and WWW.				
PART-A				
1	What are the characteristics of computer support cooperative work systems?		BTL -1	Remember
2	State the group categorization based on their geographical and temporal location.		BTL -1	Remember
3	Define CUSTOM methodology.		BTL -1	Remember
4	List the four elements of GOMS.		BTL -1	Remember
5	Classifying stakeholders – an airline booking system.		BTL -2	Understand
6	What is the Acronym for CATWOE?		BTL -1	Remember
7	Point out face-to-face communication.		BTL -1	Remember
8	What is conversation and give the basic conversational structure.		BTL -1	Remember
9	Differentiate context and the types of context.		BTL -2	Understand
10	Assess the utterances that can be classified into three kinds.		BTL -2	Understand
11	Classify Breakdown and repair.		BTL -2	Understand
12	Formulate the process as grounding.		BTL -2	Understand
13	Classify the four types of textual communication.		BTL -2	Understand
14	What are the properties of the channels in terms of grounding constraints?		BTL -1	Remember
15	Write the Hypertext conversation structure.		BTL -1	Remember
16	Differentiate Linear text vs. hypertext.		BTL -2	Understand
17	Write the applications of hypermedia.		BTL -2	Understand
18	Summarize static content and dynamic content.		BTL -2	Understand
19	Define Bandwidth, latency and jitter.		BTL -1	Remember
20	Discuss Web servers and web clients		BTL -2	Understand
PART-B				
1	i) What is cognitive model? ii) Classify cognitive models and discuss the same.	3 10	BTL -2	Understand
2	i) Explain how GOMS and the keystroke – level model support the interaction design process. ii) Summarize an example of Cognitive complexity theory and express production rules.	7 6	BTL -2	Understand

3	i) Illustrate the linguistic approach and use of Backus–Naur Form (BNF) rules to describe the dialog grammar. ii) Explain the linguistic models–BNF and Task Action Grammar in brief.	7 6	BTL -2	Understand
4	i) Discuss how do ‘golden rules’ and heuristics help interface designers take account of cognitive psychology? ii) Illustrate your answer with the design of Microsoft office word.	7 6	BTL -2	Understand
5	Describe the problem space model and interacting cognitive subsystems in detail	13	BTL -2	Understand
6	Briefly describe about the Three-state model.	13	BTL -2	Understand
7	i) Discuss how to organize a display. Explain how to get user’s attention. ii) Explain three techniques to prevent errors.	7 6	BTL -2	Understand
8	i) Point out the six key stages to carry out in a CUSTOM analysis? ii) Who is a stakeholder? Outline the types of stake holders and appraise the stakeholders for an airline booking system.	7 6	BTL -3	Apply
9	List and explain the seven stages of soft systems methodology	13	BTL -2	Understand
10	i) Explain the participatory design process utilizes a range of methods to help convey information between the user and designer. ii) Explain Effective Technical and Human Implementation of Computer-based Systems (ETHICS) and how the design groups then address the following issues and activities.	7 6	BTL -3	Apply
11	Explain some of the organizational issues that affect the acceptance and relevance of information and communication systems in detail	13	BTL -3	Apply
12	Write short notes on i) Text. ii) Hypertext. iii) Multimedia.	4 4 5	BTL -1	Remember
13	Consider the case of preparing a group presentation for a software project. Demonstrate the stages in specifying and designing UI for the same.	13	BTL -3	Apply
14	Write and develop short notes on i) Fixed content. ii) Search. iii) Automatic generation.	3 3 3	BTL -1	Remember
	iv) Batch generation.	4		
PART C				
1	One of the assumptions underlying the programmable user model approach is that it is possible to provide an algorithm to describe the user's behavior in interacting with a system. Taking this position to the extreme, choose some common task with a familiar interactive system (for example, creating a column of numbers in a spreadsheet and calculating their sum, or any other task you can think of) and describe the algorithm needed by the user to accomplish this task. Write the description in pseudocode. Does this exercise suggest any improvements in the system?	15	BTL -3	Apply

2	A group of universities has decided to collaborate to produce an information system to help potential students find appropriate courses. The system will be distributed free to schools and careers offices on CD-ROM and will provide information about course contents and requirements, university and local facilities, fees and admissions procedures. Identify the main stakeholders for this system, categorize them and describe them and their activities, currently and with regard to the proposed system, using the CUSTOM framework. 15	BTL -3	Apply
3	What is speech act theory? Explain positive and negative issues that have arisen when it has been embodied in a specific system. 15	BTL -3	Apply
4	Compare turn-taking, round-robin and free-for-all as floor control mechanisms. When might each be effective? Justify yours Answer 15	BTL -3	Apply
UNIT IV - MOBILE HCI			
Mobile Ecosystem: Platforms, Application frameworks- Types of Mobile Applications: Widgets, Applications, Games- Mobile Information Architecture, Mobile 2.0, Mobile Design: Elements of Mobile Design, Tools. Case Studies			
PART-A			
1	Tabulate some World's largest mobile operators.	BTL -1	Remember
2	List the categories of mobile platforms.	BTL -1	Remember
3	Give the importance of mobile applications (any four).	BTL -2	Understand
4	What is Cocoa Touch?	BTL -1	Remember
5	Tabulate the pros and cons of mobile websites.	BTL -1	Remember
6	Point out the pros and cons of web widgets.	BTL -2	Understand
7	Discuss the pros and cons of web applications.	BTL -2	Understand
8	Do you think that prototyping will solve all problems associated with user interface design? Give reason for your answer?	BTL -1	Remember
9	Write the pros and cons of game applications.	BTL -1	Remember
10	Define Information Architecture	BTL -1	Remember
11	Give an example mobile site map.	BTL -2	Understand
12	Write the layers of mobile ecosystem.	BTL -1	Remember
13	Demonstrate on the usage of colors in emergency response panels.	BTL -2	Understand
14	Classify Fixed versus fluid.	BTL -2	Understand
15	Write rules to be followed for Readability in mobile design.	BTL -1	Remember
16	Contrast the three basic ways to define a color palette.	BTL -2	Understand
17	Write the Mobile design tools	BTL -1	Remember
18	What are the two distinct types of navigation layouts for mobile devices?	BTL -2	Understand
19	Define Iconography.	BTL -1	Remember
20	Draw and give the typical flow of information on mobile devices.	BTL -2	Understand
PART-B			
1	i) Briefly describe the layers of the mobile ecosystem. 7 ii) Describe several unique disciplines of Information Architecture. 6	BTL -2	Understand
2	i) Discuss what is information Architecture 5 ii) Give in detail about mobile information architecture with a neat diagram 8	BTL -2	Understand

3	Elaborate and classify the broader set of devices supports operating systems.	13	BTL -3	Apply
4	List and Explain the elements of mobile design. i) Layout ii) Colour iii)Typography iv) Graphics	4 3 3 3	BTL -2	Understand
5	Compare and contrast i) Mobile application medium types ii) Mobile application media matrix	7 6	BTL -2	Understand
6	i) Define Jesse James Garrett's Elements of User Experience. ii) Describe about awful mobile user experience.	7 6	BTL -1	Remember
7	i) Give the teasing content to confirm the user's expectations. ii) Brief with an example clickstream for an iPhone web application.	7 6	BTL -2	Understand
8	State and discover an example process flow diagram.	13	BTL -3	Apply
9	Discuss the various elements of Mobile Design with a step by step method explain how to design an registration page foe movie ticket booking.	13	BTL -3	Apply
10	List some ways to do some simple and fast mobile prototyping.	13	BTL -1	Remember
11	Specify and develop the six simple rules for user with excellent readability.	13	BTL -2	Understand
12	i) Describe the types of Mobile Applications. ii) Discuss the various contexts in mobile application.	7 6	BTL -2	Understand
13	i)What is Mobile 2.0 ? ii)Mention and analyze the seven principles of Web 2.0.	3 10	BTL -2	Understand
14	i) Mention tools and what interface toolkits are available for it. ii) Examine the design for different screen size and write devices	7 6	BTL -2	Understand
PART C				
1	List the ten world large Mobile operators and compose the rank, markets, technologies used, and subscriber numbers.	15	BTL -2	Understand
2	Formulate the advantages and disadvantages of using the following Mobile Applications i.SMS ii.Mobile Websites iii. Mobile Web Widgets iv.Mobile Web Applications	15	BTL -2	Understand
3	Give an example mobile information architecture that was designed with desktop users in mind rather than mobile users. Summarize the pros and cons of the Architecture	15	BTL -3	Apply
4	Compare the Mobile web applications and Native applications with suitable case studies.	15	BTL -3	Apply

UNIT V – WEB INTERFACE DESIGN				
Designing Web Interfaces – Drag & Drop, Direct Selection, Contextual Tools, Overlays, Inlays and Virtual Pages, Process Flow. Case Studies.				
PART-A				
1	Define Object Selection.	BTL -1	Remember	
2	Define Mystery Meat and Soft Mode.	BTL -1	Remember	
3	Discuss the various approaches for Drag and Drop Modules.	BTL -2	Understand	
4	Write down the purpose of drag and drop.	BTL -1	Remember	
5	What is auto complete pattern?	BTL -1	Remember	
6	Write the best practices for Drag and Drop List	BTL -2	Understand	
7	Differentiate Dragged object versus drop target.	BTL -2	Understand	
8	Tabulate the types of selection patterns.	BTL -2	Understand	
9	Differentiate modal and non-modal overlays.	BTL -2	Understand	
10	Mention and point out some nice attributes for toggle selection.	BTL -2	Understand	
11	State and discover Fitt’s law.	BTL -1	Remember	
12	Develop some issues with showing contextual tools.	BTL -2	Understand	
13	What is Anti pattern?	BTL -1	Remember	
14	What is mutton? Why is it used?	BTL -1	Remember	
15	What is meant by Lightweight overlays?	BTL -2	Understand	
16	What is Lightbox Effect?	BTL -2	Understand	
17	Write few things to keep in mind while using InputOverlays.	BTL -2	Understand	
18	Give the difference between Inlay and Overlay.	BTL -2	Understand	
19	Write an example for virtual scrolling.	BTL -2	Understand	
20	What is Carousel?	BTL -2	Understand	
PART-B				
1	Briefly describe the events available for cueing the user during a drag and drop interaction.	13	BTL -2	Understand
2	Tabulate the principles for designing rich web interface.	13	BTL -1	Remember
3	Write and describe short notes on i) Drag and Drop Action ii) Drag and Drop Collection	7 6	BTL -2	Understand
4	Demonstrate the process flow of web interface design.	13	BTL -3	Apply
5	i) How are contextual tools used in the design of rich web UI? ii) Illustrate and compare with suitable examples.	7 6	BTL -2	Understand
6	i) Summarize the Challenges of Drag and Drop. ii) Explain the purpose of Drag and Drop.	7 6	BTL -2	Understand
7	Explain and analyze Tools in detail with example .i) Always-Visible Tools ii) Hover-Reveal Tools iii) Toggle-Reveal Tools iv) Multi-Level Tools	4 3 3 3	BTL -3	Apply

8	Describe in detail about the three specific types of overlays: i)Dialog Overlays ii)Detail Overlay ii)Input Overlays	5 3 5	BTL -2	Understand
9	i) Point out in detail about Secondary Menu. ii) Explain how to inlay the information directly within the page.	7 6	BTL -2	Understand
10	i) Define Tabs and its types. ii) Explain different types of inlays?	7 6	BTL -2	Understand
11	i)Interpret the patterns that support virtual pages used in the design of rich web UI. ii) Compare the patterns with suitable examples.	7 6	BTL -3	Apply
12	Design a web interface for a 'Library Management System'. State the functional requirements you are considering.	13	BTL -3	Apply
13	Tabulate the following i)Paging ii)Scrolling	7 6	BTL -2	Understand
14	Explain the following: i)Interactive Single-Page Process ii)Inline Assistant Process	7 6	BTL -2	Understand
PART C				
1	Create your own example to design a drag and drop module on a Webpage and give the step by step interaction in detail with necessary diagrams.	15	BTL -3	Apply
2	Explain the combination of object selection and Toggle selection with suitable example. Analyze its advantages and disadvantages in detail	15	BTL -3	Apply
3	Design the technique that is used to reveal customization controls of webpage. Discuss that technique with diagrammatic illustration.	15	BTL -3	Apply
4	Find out the applications in which the following techniques. Summarize the use of technique in that application. a. Virtual Panning b. Zoomable user interface	15	BTL -3	Apply