HUMAN COMPUTER INTERACTION

QUESTION BANK WITH ANSWERS

Syllabus

HUMAN COMPUTER INTERACTION

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UNIT II DESIGN & SOFTWARE PROCESS 9

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UNIT 1.

PART A

1. **What is HCI?**

   Human-computer interaction (HCI) is the study and planned design of human and computer activities. HCI uses productivity, safety and entertainment to support and fulfill human-computer activities and is applied to various types of computer systems, including air traffic control, nuclear processing, offices and computer gaming. HCI systems are easy, safe, effective and enjoyable.

2. **Who is involved in HCI?**

   User: "user", we may mean an individual user, a group of users working together. An appreciation of the way people's sensory systems (sight, hearing, touch) relay information is vital. Also, different users form different conceptions or mental models about their interactions and have different ways of learning and keeping knowledge and. In addition, cultural and national differences play a part.

   Computer

   When we talk about the computer, we're referring to any technology ranging from desktop computers, to large scale computer systems. For example, if we were discussing the design of a Website, then the Website itself would be referred to as "the computer". Devices such as mobile phones or VCRs can also be considered to be “computers”.

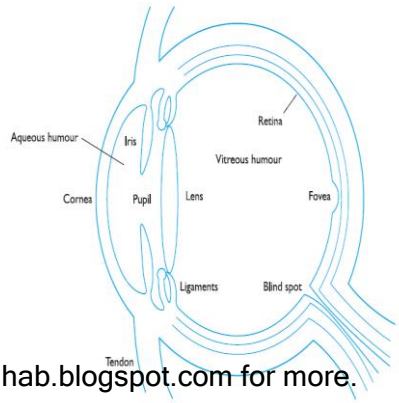
   Interaction

   There are obvious differences between humans and machines. In spite of these, HCI attempts to ensure that they both get on with each other and interact successfully. In order to achieve a usable system, you need to apply what you know about humans and computers, and consult with likely users throughout the design process. In real systems, the schedule and the budget are important, and it is vital to find a balance between what would be ideal for the users and what is feasible in reality.

3. **What are the 5 major senses?**

   Sight Hearing Touch Taste Smell

4. **List the parts of human Eye.**



Parts of the Eye

Cornea (kor'ne-ah): The clear, transparent front portion of the fibrous coat of the eye; functions as an important refractive medium.

Sclera (skle'rah): The tough white protective coat of the eye. The portion of the sclera that surrounds the cornea is covered by the conjunctiva.

Conjunctiva (kon-junk'ti-va): A mucous membrane extending from the eyelid margin to the corneal limbus, forming the posterior layer of the eyelids and the anterior layer of the eyeball.

Iris (i'ris): A colored, circular membrane suspended behind the cornea and immediately in front of the lens. It regulates amount of light entering the eye by adjusting size and pupil.

Pupil (pu'pil): The opening at the center of the iris of the eye; it contracts when exposed to strong light or when the focus is on a near object and it dilates when in the dark or when the focus is on a distant object.

Aqueous (a'kwe-us): Watery liquid that flows between the lens and the cornea and nourishes them.

Lens (lenz) : The transparent tissue behind the iris that bends light rays and focuses them on the retina.

Schlemm's Canal (Schlemz ke'nal): A passageway for the aqueous fluid to leave the eye.

Vitreous body (vit're-us): Transparent, colorless mass of soft, gelatinous material that fills the center of the eye behind the lens.

Retina (ret'i-nah): Light-sensitive tissue at the back of the eye which transmits visual impulses via the optic nerve to the brain.

Macula (mak'u-lah): Pigmented central area or "yellow spot" of the retina devoid of blood vessels. It is the most sensitive area of the retina and is responsible for fine or reading vision.

Choroid (ko'roid): Blood vessel-rich tissue behind the retina that is responsible for its nourishment.

Optic nerve (op'tick nurv): The nerve at the back of the eye that carries visual impulses from the retina to the brain. The area at which the optic nerve connects with the retina is known as the optic disc.

5. **What is meant by visual perception?**

Visual perception is the ability to see, organize, and interpret one's environment. Visual perception is the ability to interpret the surrounding environment by processing information that is contained in visible light. The resulting perception is also known as eyesight, sight, or vision (adjectival form: visual, optical, or ocular). The various physiological components involved in vision are referred to collectively as the visual system, and are the focus of much research in linguistics, psychology, cognitive science, neuroscience, and molecular biology, collectively referred to as vision science.

6. **What are the effo ectors?**

- Limbs Fingers Eyes Head Vocal system.

7. **What are the two stages of vision**

- The physical reception of the stimulus from outside world, and
- The processing and interpretation of that stimulus.

8. What is rods and cones?

Rods are highly sensitive to light and therefore allow us to see under a low level of Illumination. The rods have been active and are saturated by the sudden light.

The cones do not operate either as they are suppressed by the rods. We are therefore temporarily unable to see at all. Rods therefore dominate peripheral

9. What are the input and output channels of human?

Input in human is mainly though the senses and output through the motor control of the effectors.

There are five major senses: Sight, Hearing, Touch, Taste, and Smell.

There are a number of effectors: Limbs, Fingers, Eyes, Head, Vocal system.

10. What is reading?

There are several stages in the reading process. First, the visual pattern of the word on the page is perceived. It is then decoded with reference to an internal representation of language. The final stages of language processing include syntactic and semantic analysis and operate on phrases or sentences.

11. What is hearing?

Provides information about environment: distances, directions, objects etc.

Physical apparatus:

- outer ear – protects inner and amplifies sound
- middle ear – transmits sound waves as vibrations to inner ear
- inner ear – chemical transmitters are released and cause impulses in auditory nerve Sound
- pitch – sound frequency
- loudness – amplitude timbre – type or quality

12. What is meant by processing sound?

Sound is changes or vibrations in air pressure. It has a number of characteristics which we can differentiate. Pitch is the frequency of the sound. A low frequency produces a low pitch, a high frequency, a high pitch. Loudness is proportional to the amplitude of the sound; the frequency remains constant. Timbre relates to the type of the sound: sounds may have the same pitch and loudness but be made by different instruments and so vary in timbre.

13. What is touch?

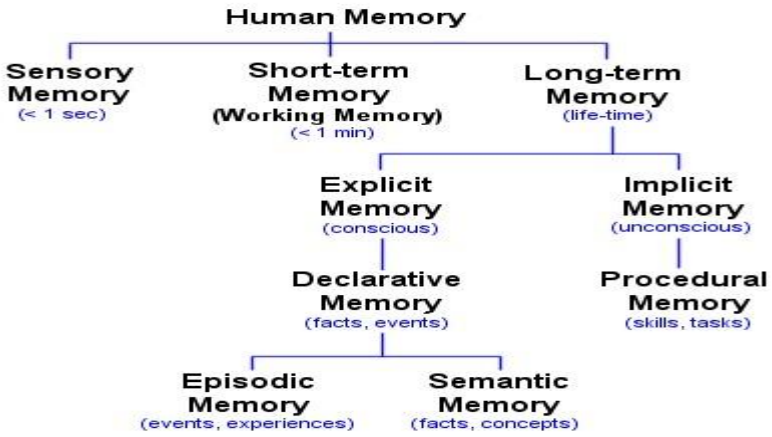
Touch Provides important feedback about environment. May be key sense for someone who is visually impaired. Stimulus received via receptors in the skin:

- thermoreceptors – heat and cold
- nociceptors – pain
- mechanoreceptors – pressure (some instant, some continuous)

Some areas more sensitive than others e.g. fingers.

Kinethesis - awareness of body position affects comfort and performance.

14. Draw the structure of human Memory.



15. What is sensory memory?

Buffers for stimuli received through senses

- iconic memory: visual stimuli
- echoic memory: aural stimuli
- haptic memory: tactile stimuli

Examples: "sparkler" trail, stereo sound

16. What is long term memory? And mention its types

Long-term memory is intended for the long-term storage of information.

There are two types of long-term memory: episodic memory and semantic memory.

Episodic memory: It represents our memory of events and experiences in a serial form. It is from this memory that we can reconstruct the actual events that took place at a given point in our lives.

Semantic memory: is a structured record of facts, concepts and skills that we have acquired. The information in semantic memory is derived from that in our episodic memory, such that we can learn new facts or concepts from our experiences.

17. What is Short term memory?

Short-term memory or working memory acts as a 'scratch-pad' for temporary recall of information. It is used to store information which is only required fleetingly.

Short-term memory can be accessed rapidly, in the order of 70 ms.

Short-term memory also has a limited capacity

18. What is semantic memory?

The information in semantic memory is derived from that in our episodic memory; Semantic memory is structured in some way to allow access to information, representation of relationships between pieces of information, and inference. One model for the way in which semantic memory

is structured is as a network associated to each other in classes, and may inherit attributes from parent classes. This model is known as a semantic network.

19. **Define Moore's law.**

Moore's law refers to an observation made by Intel co-founder Gordon Moore in 1965. He noticed that the number of transistors per square inch on integrated circuits had doubled every year since their invention.

Moore's law predicts that this trend will continue into the foreseeable future. Although the pace has slowed, the number of transistors per square inch has since doubled approximately every 18 months.

20. **What is forgetting?**

Forgetting or disremembering is the apparent loss or modification of information already encoded and stored in an individual's long term memory. It is a spontaneous or gradual process in which old memories are unable to be recalled from memory storage. Forgetting also helps to reconcile the storage of new information with old knowledge.

There are two main theories of forgetting: **decay and interference.**

The first theory suggests that the information held in long-term memory may eventually be forgotten.

The second theory is that information is lost from memory through interference. If we acquire new information it causes the loss of old information. This is termed retroactive interference.

21. **What is retrieval?**

- recall -information reproduced from memory can be assisted by cues, e.g. categories, imagery
- recognition -information gives knowledge that it has been seen before
- less complex than recall - information is cue

22. **Differentiate deductive reasoning, inductive reasoning and abductive reasoning**

- Deductive reasoning derives the logically necessary conclusion from the given premises.
- Induction is generalizing from cases we have seen to infer information about cases we have not seen.
- Abduction reasons from a fact to the action or state that caused it. This is the method we use to derive explanations for the events we observe.

23. **What is gestalt theory?**

- problem solving both productive and reproductive
- productive draws on insight and restructuring of problem
- attractive but not enough evidence to explain `insight' etc.

24. **What is problem space theory?**

Newell and Simon 1972, problem space theory to problem solving differs from reconstruction and trial and error mentioned in a previous blog. This theory believes that we search the problem space to find the answer.

The problem space consists of two states. We have the initial state, which is our state that we are currently in and the goal state which is where we are aiming to get to, or the solution. For example take the Tower of Hanoi Problem. The initial state would be where the rings are at the beginning and the goal state will be strategy used to get the rings to the end pole in size order only moving one at a time.

25. Mention the types of error?

Slips

- right intention, but failed to do it right
- causes: poor physical skill,inattention etc.
- change to aspect of skilled behaviour can cause slip

Mistakes

- d. wrong intention
- e. cause: incorrect understanding

Humans create mental models to explain behaviour. if wrong (different from actual system) errors can occur

26. What is meant by Batch processing?

Batch processing interactions takes place over hours or days. In contrast the typical desktop computer system has interactions taking seconds or fractions of a second (or with slow web pages sometimes minutes!). The field of Human– Computer Interaction largely grew due to this change in interactive pace. It is easy to assume that faster means better, but some of the paper-based technology

27. Define Richer interaction.

Information appliances are putting internet access or dedicated systems onto the fridge, microwave and washing machine: to automate shopping, give you email in your kitchen or simply call for maintenance when needed. We carry with us WAP phones and smartcards, have security systems that monitor us and web cams that show our homes to the world.

28. What are text entry devices available in computer?

- keyboards (QWERTY et al.), alphabetic keyboard,
- chord keyboards, phone pads
- handwriting, speech

29. What is meant by chord Keyboards.

A keyset or chorded keyboard is a computer input device that allows the user to enter characters or commands formed by pressing several keys together, like playing a "chord" on a piano. The large number of combinations available from a small number of keys allows text or commands to be entered with one hand, leaving the other hand free. A secondary advantage is that it can be built into a device that is too small to contain a normal-sized keyboard. A chorded keyboard minus the board, typically designed to be used while held in the hand, is called a keyer.

30. What is jaggies and anti-aliasing?

- Jaggies - diagonal lines that have discontinuities in due to horizontal raster scan process.
- Anti-aliasing - softens edges by using shades of line colour also used for text

31. Define eye gaze

Eyegaze systems allow you to control the computer by simply looking at it. A low-power laser is shone into the eye and is reflected off the retina. The reflection changes as the angle of the eye alters, and by tracking the reflected beam the eyegaze system can determine the direction in which the eye is looking. The system needs to be calibrated, typically by staring at a series of dots on the screen, but thereafter can be used to move the screen cursor or for other more specialized uses. Eyegaze is a very fast and accurate device, but the more accurate versions can be expensive. It is fine for selection but not for drawing since the eye does not move in smooth lines. Also in real applications it can be difficult

32. What is meant by bit map display?

Bit map display is made of vast numbers of colored dots or pixels in a rectangular grid. These pixels may be limited to black and white in grayscale, or full color. The color or, for monochrome screens, the intensity at each pixel is held by the computer's video card. One bit per pixel can store on/off information, and hence only black and white

33. Define Digital paper.

Digital paper, also known as interactive paper, is patterned paper used in conjunction with a digital pen to create handwritten digital documents. The printed dot pattern uniquely identifies the position coordinates on the paper. The digital pen uses this pattern to store the handwriting and upload it to a computer

34. Mention the health hazards of CRT

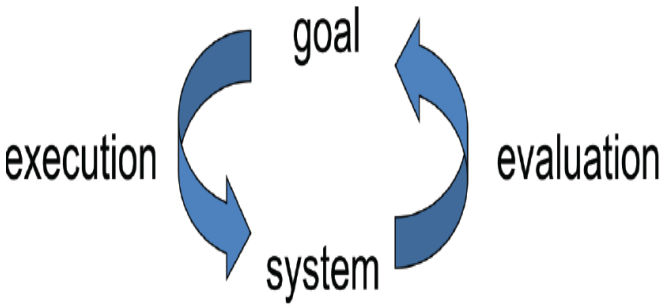
- X-rays: largely absorbed by screen (but not at rear!)
- UV- and IR-radiation from phosphors: insignificant levels
- Radio frequency emissions, plus ultrasound (~16kHz)
- Electrostatic field - leaks out through tube to user. Intensity dependant on distance and humidity. Can cause rashes. Electromagnetic fields (50Hz-0.5MHz).
- Create induction currents in conductive materials, including the human body. Two types of effects attributed to this: visual system - high incidence of cataracts in VDU operators, and concern over reproductive disorders (miscarriages and birth defects).

35. Mention 7 stages of Donald norman's model in interaction?

- user establishes the goal
- formulates intention
- specifies actions at interface
- executes action
- perceives system state
- interprets system state
- evaluates system state with respect to goal

36. What is execution and evaluation loop

- user establishes the goal
- formulates intention
- specifies actions at interface
- executes action
- perceives system state
- interprets system state
- evaluates system state with respect to goal



37. What is ergonomics

It is a Study of the physical characteristics of interaction.Also known as human factors – but this can also be used to mean much of HCI. Ergonomics is good at defining standards and guidelines for constraining the way we design certain aspects of systems

Examples:

- arrangement of controls and displays e.g. controls grouped according to function or frequency of use, or sequentially
- surrounding environment e.g. seating arrangements adaptable to cope with all sizes of user

38. List out common interaction styles

- command line interface
- menus
- natural language
- question/answer and query dialogue
- form-fills and spreadsheets
- WIMP
- point and click
- three–dimensional interfaces

39. What is WIMP? list its elements

In human–computer interaction, WIMP stands for "windows, icons, menus, pointer", It denotes style of interaction using these elements of the user interface.

- Windows -Areas of the screen that behave as if they were independent
- Icons - small picture or image
- Menus - Choice of operations or services offered on the screen
- Pointers-WIMP style relies on pointing and selecting things

40. Define Data context of interaction.

Data, context and interaction (DCI) is a paradigm used in computer software to program systems of communicating objects. Its goals are:

- To improve the readability of object-oriented code by giving system behavior first-class status;
- To cleanly separate code for rapidly changing system behavior (what a system does) versus slowly changing domain knowledge (what a system is), instead of combining both in one class interface;
- To help software developers reason about system-level state and behavior instead of only object state and behavior;
- To support an object style of thinking that is close to programmers' mental models, rather than the class style of thinking that overshadowed object thinking early in the history of object-oriented programming languages.

41. What is meant by agent based interfaces?

An agent-based model (ABM) is one of a class of computational models for simulating the actions and interactions of autonomous agents with a view to assessing their effects on the system as a whole. Agent-based models are a kind of microscale model that simulate the simultaneous operations and interactions of multiple agents in an attempt to re-create and predict the appearance of complex phenomena.

42. What are paradigms and give examples

paradigms is a distinct set of concepts or thought patterns, including theories, research methods, postulates, and standards for what constitutes legitimate contributions to a field. Paradigms promote the usability of interactive systems.

Predominant theoretical frameworks or scientific world views

a. Aristotelian, Newtonian, Einsteinian (relativistic) paradigms in physics

- Understanding HCI history is largely about understanding a series of paradigm shifts

b. Not all listed here are necessarily "paradigm" shifts, but are at least candidates

History will judge which are true shifts

Examples: Batch processing , Timesharing, Networking, Graphical display, Microprocessor, WWW, Ubiquitous Computing

43. What is metaphor

It is relating computing to other real-world activity is effective teaching technique

a. LOGO's turtle dragging its tail

b. file management on an office desktop

c. word processing as typing

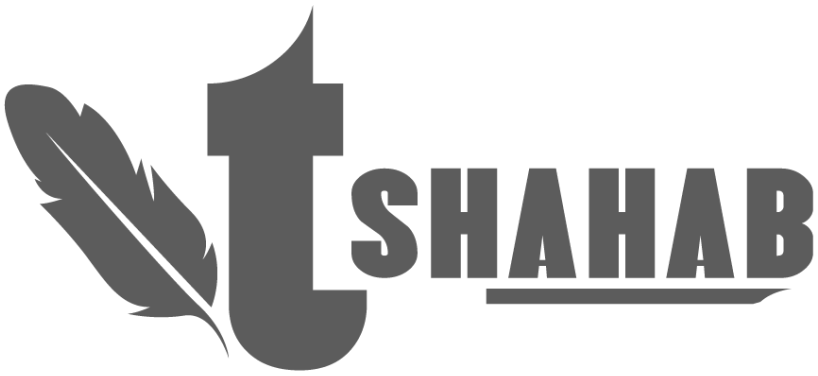
d. financial analysis on spreadsheets

e. virtual reality – user inside the metaphor Problems

f. some tasks do not fit into a given metaphor cultural bias

44. What is ubiquitous computing?

Ubiquitous computing is a concept in software engineering and computer science where computing is made to appear anytime and everywhere. In contrast to desktop computing, ubiquitous computing can occur using any device, in any location, and in any format. A user interacts with the computer, which can exist in many different forms, including laptop computers, tablets and terminals in everyday objects such as a fridge or a pair of glasses. The underlying technologies to support ubiquitous computing include Internet, advanced middleware, operating system, mobile code, sensors, microprocessors, new I/O and user interfaces, networks, mobile protocols, location and positioning and new materials.



UNIT 2.
PART A

1. **State the golden rule of design.**

The designs we produce may be different, but often the raw materials are the same. This leads us to the golden rule of design:

- understand your materials

For Human–Computer Interaction the obvious materials are the human and the computer. That is we must:

- Understand computers :– limitations, capacities, tools, platforms
- Understand people: – psychological, social aspects, human error.

2. **What is meant by interaction design process?**

The core of interaction design: put the user first, keep the user in the center and remember the user at the end

3. **Mention the process of design**

A system has been designed and built, and only when it proves unusable do they think to ask how to do it right! In other companies usability is seen as equivalent to testing – checking whether people can use it and fixing problems, rather than making sure they can from the beginning.

- Identifying needs and establishing requirements
- Developing alternative designs that meet those requirements
- Building interactive versions of the designs so that they can be communicated and assessed
- Evaluating what is being built throughout the process

4. **List the main focus of user.**
   The start of any interaction design exercise must be the intended user or users. This is often stated as: **know your users**

5. What is “know your user”?
   - Who are they?
   - Probably not like you!
   - Talk to them.
   - Watch them.
   - Use your imagination.

6. **What is meant by Navigation design?**
   Users may find many points of entry into a website...none of which may be the home page of the site. Effective navigation design gives the viewer a sense of the site layout regardless

of his or her entry point. Persistent navigation provides entry access from any point to any point intuitive use of graphical and textual navigational cues way finding aids (you are here) breadcrumb trails, site maps etc.

7. **List screen design tools**
    - Tools for layout
    - User action and control Tools
    - Appropriate appearance Tools

8. **What are the tools used for layout design.**

    Grouping and structure

    If things logically belong together, then we should normally physically group them together. This may involve multiple levels of structure.
    - Order of groups and items
    - Decoration
    - Alignment
    - White space

9. **What is meant by scenarios**

    A scenario describes one way that a system is or is envisaged to be used in the context of activity in a defined time-frame. The time-frame for a scenario could be (for example) a single transaction; a business operation; a day or other period; or the whole operational life of a system. Scenarios are frequently used as part of the system development process. They are typically produced by usability or marketing specialists, often working in concert with end users and developers. Scenarios are written in plain language, with minimal technical details, so that stakeholders can have a common example which can focus their discussions.

10. **What is meant by linearity?**

    Linearity presentation of information and you process the information without footnotes or references. You start at the beginning and continue to read in sequence until you get to the end. Information may be presented chunks but the author expects you to follow a preset order

11. **What is meant by interaction and prototyping?**

    Interaction: Interaction models help us to understand what is going on in the interaction between user and system. They address the translations between what the user wants and what the system does.

    Prototypes: are experimental and incomplete designs which are cheaply and fast developed. Prototyping, which is the process of developing prototypes, is an integral part of iterative user-centered design because it enables designers to try out their ideas with users and to gather feedback

12. **What is grouping and structure**

If things logically belong together, then we should normally physically group them together. This may involve multiple levels of structure. Notice how the details for billing and delivery are grouped together spatially; also note how they are separated from the list of items actually ordered by a line as well as spatially. This reflects the following
logical structure:

Order:

Administrative information

Billing details

Delivery details

Order information

Order line 1

Order line 2

13. What are the elements of design model?

i. Data design

ii. Architectural design

iii. Interface design

iv. Component-level design

14. List the principles of a software design in HCI.

i. The design process should not suffer from "tunnel vision"

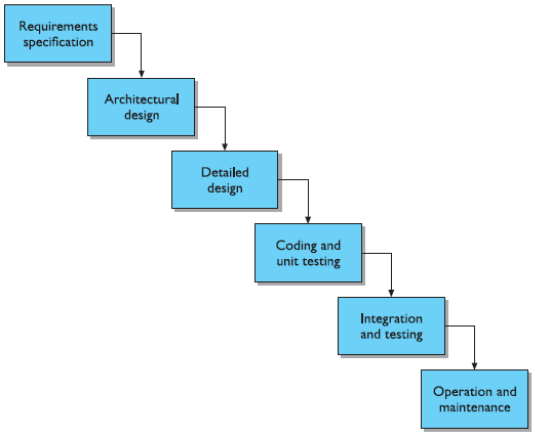
ii. The design should be traceable to the analysis model.

iii. The design should exhibit uniformity and integration.

iv. Design is not coding.

v. The design should not reinvent the wheel.

15. What are the activities involved in waterfall model?



16. Define model of software life cycle.

SDLC, Software Development Life Cycle is a process used by software industry to design, develop and test high quality softwares. The SDLC aims to produce a high quality software that meets or exceeds customer expectations, reaches completion within times and cost estimate

Stage 1: Planning and Requirement Analysis
Stage 2: Defining Requirements
Stage 3: Designing the product architecture
Stage 4: Building or Developing the Product
Stage 5: Testing the Product
Stage 6: Deployment in the Market and Maintenance

17. What is vertical partitioning?

Vertical partitioning of data refers to creating tables with fewer columns and using other tables to store the remaining columns. Normalization follows a similar principle. E.g. separately storing Age and Name (frequently needed) in one table and Phone number and address (less frequently used) in another.

18. What is usability engineering?

Usability engineering implies more of a focus on assessing and making recommendations to improve usability than it does on design. Usability Engineers may still engage in design to some extent, particularly through the design of wire-frames or other prototypes.

19. Mention the parts of usability specification for VCR

Measuring concept : Undo an erroneous programming sequence
Measuring method : Number of explicit user actions to undo current program
Now level : No current product allows such an undo
Worst case : As many actions as it takes to program in mistake
Planned level : A maximum of two explicit user actions
Best case : One explicit cancels action

20. List some ISO usability standards 9241

Usability Objective	**Effectiveness measures**	**Efficient measures**	**Satisfaction measures**
Suitability for the task	Percentage of goals achieved	Time to complete a task	Rating scale for satisfaction
Appropriate for trained users	Number of power features used	Relative efficiency compared with an expert user	Rating scale for satisfaction with power features
Learnability	Percentage of functions learned	Time to learn criterion	Rating scale for ease of learning
Error tolerance	Percentage of errors corrected successfully	Time spent on correcting errors	Rating scale for error handling

21. Differentiate throw away prototyping and incremental prototyping

Throw-away The prototype is built and tested. The design knowledge gained from this exercise is used to build the final product, but the actual prototype is discarded.the procedure in using throw-away prototypes to arrive at a final requirements specification in order for the rest of the design process to proceed.

Incremental The final product is built as separate components, one at a time. There is one overall design for the final system, but it is partitioned into independent and smaller components. The final product is then released as a series of products, each subsequent release including one more component.

22. What are techniques used for prototyping

- To describe the use of prototypes in different types of development project.
- To discuss evolutionary and throw-away prototyping.
- To introduce three rapid prototyping techniques - high-level language development, database programming and component reuse.
- To explain the need for user interface prototyping.

23. What is meant by learnabililty, flexibility and robustness?

- **Learnability** : The ease with which new users can begin effective interaction and achieve maximal performance

- **Flexibility:** The multiplicity of ways the user and system exchange information

- **Robustness:** The level of support provided to the user in determining successful achievement and assessment of goal-directed behavior

24. What is meant by task Migratability?

Task migratability concerns the transfer of control for execution of tasks between system and user. It should be possible for the user or system to pass the control of a task over to the other or promote the task from a completely internalized one to a shared and cooperative venture. Hence, a task that is internal to one can become internal to the other or shared between the two partners.

25. Define under lying theory.

Underlying theory Standards for hardware are based on an understanding of physiology or ergonomics/human factors, the results of which are relatively well known, fixed and readily adaptable to design of the hardware. Software standards are based on theories from psychology or cognitive science, which are less well formed, still evolving and not very easy to interpret in the language of software design. Consequently, standards for hardware can directly relate to a hardware specification and still reflect the underlying theory, where as software standards would have to be more vaguely worded.

26. Give benefits of design rationale

- communication throughout life cycle
- reuse of design knowledge across products
- enforces design discipline
- presents arguments for design trade-offs

- organizes potentially large design space
- capturing contextual information

27. List out types of design rules

Designing for maximum usability

– the goal of interaction design

• Principles of usability

– general understanding

• Standards and guidelines

– direction for design

• Design patterns

– capture and reuse design knowledge

Types of design rules

- principles
  - abstract design rules
  - low authority
  - high generality
- standards
  - specific design rules
  - high authority
  - limited application

• Guidelines

- lower authority
- more general application

28. List out Shneiderman's 8 Golden Rules of interface design

- Strive for consistency
- Enable frequent users to use shortcuts
- Offer informative feedback.
- Design dialogue to yield closure.
- Offer simple error handling
- Permit easy reversal of actions
- Support internal locus of control.
- Reduce short-term memory load.

29. List out Norman's 7 Principles for transforming difficult task in to a simple one

- Use both knowledge in the world and knowledge in the head
- Simplify the structure of tasks.
- Make things visible:
- Get the mappings right.
- Exploit the power of constraints,

- Design for error.
- When all else fails, standardize.

30. What is goal of evaluation

Goal of evaluation is to identify specific problems with the design. These may be aspects of the design which, when used in their intended context, cause unexpected results, or confusion amongst users.

31. Define cognitive walkthrough

Cognitive walkthrough is task-specific, whereas heuristic evaluation takes a holistic view to catch problems not caught by this and other usability inspection methods. The method is rooted in the notion that users typically prefer to learn a system by using it to accomplish tasks, rather than, for example, studying a manual. The method is prized for its ability to generate results quickly with low cost, especially when compared to usability testing, as well as the ability to apply the method early in the design phases, before coding even begins.

32. What is Heuristic Evaluation

A heuristic evaluation is a usability inspection method for computer software that helps to identify usability problems in the user interface (UI) design. It specifically involves evaluators examining the interface and judging its compliance with recognized usability principles (the "heuristics"). These evaluation methods are now widely taught and practiced in the new media sector, where UIs are often designed in a short space of time on a budget that may restrict the amount of money available to provide for other types of interface testing.

33. What is meant by model based Evaluation

Cognitive and design models provide a means of combining design specification and evaluation into the same framework. Design rationale provides a framework in which design options can be evaluated. By examining the criteria that are associated with each option in the design, and the evidence that is provided to support these criteria, informed judgments can be made in the design. Dialog models can also be used to evaluate dialog sequences for problems, such as unreachable states, circular dialogs and complexity.

34. List different styles of Evaluation

- Inspection methods (no users needed!)
  - – Heuristic evaluations
  - – Walkthroughs
  - – Other Inspections
- User Tests (users needed!)
  - – Observations/Ethnography
  - – Usability tests/ Controlled Experiments

35. Define automatic analysis tools

Analyzing protocols, video, audio or system logs, is time consuming and tedious by hand. It is made harder if there is more than one stream of data to synchronize. Solution to this problem is to

provide automatic analysis tools to support the task. These offer a means of editing and annotating video, audio and system logs and synchronizing these for detailed analysis.

36. What types of test available in analysis

parametric

- assume normal distribution
- robust
- powerful

non parametric

- do not assume normal distribution
- less powerful
- more reliable

contingency table

- classify data by discrete attributes
- count number of data items in each group

37. What is think aloud

Think aloud is a form of observation where the user is asked to talk through what he is doing as he is being observed; Think aloud has the advantage of simplicity; it requires little expertise to perform (though can be tricky to analyze fully) and can provide useful insight into problems with an interface. It can also be employed to observe how the system is actually used. It can be used for evaluation throughout the design process, using paper or simulated mock-ups for the earlier stages.

38. Mention about query techniques

Query techniques can be useful in eliciting detail of the user's view of a system. They embody the philosophy that states that the best way to find out how a system meets user requirements is to 'ask the user'. They can be used in evaluation and more widely to collect information about user requirements and tasks. The advantage of such methods is that they get the user's viewpoint directly and may reveal issues that have not been considered by the designer.

39. What are the approaches present for user support

- Command assistance
- Command prompts
- Context-sensitive help
- Online tutorials
- Online documentation
- Wizards and assistants

40. Define impairment

Impairment is an accounting principle that describes a permanent reduction in the value of a company's asset, normally a fixed asset. When testing for impairment, the total profit, cash flow

or other benefit that's expected to be generated by a specific asset is periodically compared with that same assets book value.

41. **Difference between multi modal and multi media**

Multimodal describes communication practices in terms of the textual, aural, linguistic, spatial, and visual resources - or modes - used to compose messages

Multimedia is content that uses a combination of different content forms such as text, audio, images, animations, video and interactive content. Multimedia contrasts with media that use only rudimentary computer displays such as text-only or traditional forms of printed or hand-produced material.

42. **How to support user support systems.**

- quick reference
- full explanation
- tutorial
- on line and off line documents

UNIT 3
PART A

1. **What is meant by GOMS? Give an example.**

   Goals are symbolic structures that define a state of affairs to be achieved and determinate a set of possible methods by which it may be accomplished

   Operators are elementary perceptual, motor or cognitive acts, whose execution is necessary to change any aspect of the user's mental state or to affect the task environment

   Methods describe a procedure for accomplishing a goal

   Selection Rules are needed when a goal is attempted; there may be more than one method available to the user to accomplish it.

2. **What is cognitive model?**

   Cognitive modeling deals with simulating human problem solving and mental task processes in a computerized model. Cognitive modeling is used in numerous artificial intelligence (AI) applications, such as expert systems, natural language programming, and neural networks, and in robotics and virtual reality applications. Cognitive models are also used to improve products in manufacturing segments such as human factors engineering, and computer game and user interface design. Research into cognitive modeling is currently being conducted by academic and industry groups, including MIT, IBM, and Sandia National Laboratories.

3. **Define cognitive complexity theory.**

   Cognitive complexity theory, introduced by Kieras and Polson, begins with the basic premises of goal decomposition from GOMS and enriches the model to provide more predictive power. CCT has two parallel descriptions: one of the user's goals and the other of the computer system (called the device in CCT). The description of the user's goals is based on a GOMS-like goal hierarchy, but is expressed primarily using production rules.

4. **Differentiate goal and task?**

   - A task is something you do.
   - A goal is something you want to achieve, a desirable outcome.

5. **What is CCT? And give example.**

   Cognitive complexity theory, introduced by Kieras and Polson, begins with the basic premises of goal decomposition from GOMS and enriches the model to provide more predictive power. CCT has two parallel descriptions: one of the user's goals and the other of the computer system (called the device in CCT). The description of the user's goals is based on a GOMS-like goal hierarchy, but is expressed primarily using production rules.

6. **What is meant by Backups Naur Form? Give an example.**

   Backus–Naur form (BNF) is a notation technique for context-free grammars, often used to describe the syntax of languages used in computing, such as computer programming languages, document formats, instruction sets and communication protocols. They are

applied wherever exact descriptions of languages are needed: for instance, in official language specifications, in manuals, and in textbooks on programming language theory.

draw-line ::= select-line + choose-points + last-point
select-line ::= position-mouse + CLICK-MOUSE
choose-points ::= choose-one
| choose-one + choose-points
choose-one ::= position-mouse + CLICK-MOUSE
last-point ::= position-mouse + DOUBLE-CLICK-MOUSE
position-mouse ::= empty | MOVE-MOUSE + position-mouse

7. What is Task Action Grammar?

Task–action grammar (TAG) attempts to deal with some of these problems by including elements such as parameterized grammar rules to emphasize consistency and encoding the user's world knowledge (for example, up is the opposite of down).

8. What is Key stroke Level Model?

Keystroke-level model (KLM) predicts how long it will take an expert user to accomplish a routine task without errors using an interactive computer system.

9. What is meant by problem space model?

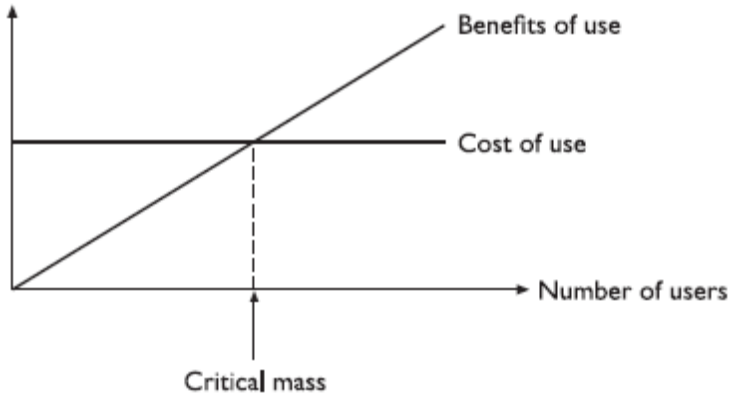
A problem space consists of a set of states and a set of operations that can be performed on the states. Behavior in a problem space is a two-step process.The current operator is chosen based on the current state and then it is applied to the current state to achieve the new state. The problem space must represent rational behavior, and so it must characterize the goal of the agent. A problem space represents a goal by defining the desired states as a subset of all possible states. Once the initial state is set, the task within the problem space is to find a sequence of operations that form a path within the state space from the initial state to one of the desired states, whereupon successful termination occurs.

10. What is meant by interacting cognitive sub system?

- ICS provides a model of perception, cognition and action,
- ICS provides a more holistic view of the user as an information-processing machine. The emphasis is on determining how easy particular procedures of action sequences become as they are made more automatic within the user
- ICS attempts to incorporate two separate psychological traditions within one cognitive architecture

11. What is critical mass?

Critical mass is the point at which a growing company becomes self-sustaining, and no longer needs additional investment to remain economically viable.



12. What is meant by automating process workflow BPR?

Business process reengineering (BPR) is the analysis and redesign of workflows within and between enterprises in order to optimize end-to-end processes and automate non-value-added tasks.

The major task in many organizations is moving pieces of paper around. An order is received by phone and an order form filled in by the sales executive. The order form is passed to accounts who check the credit rating and if all is okay it is passed on to stores who check availability and collect the order together at the picking line. When the order is dispatched, a delivery note is packed with the order and a copy is returned to accounts, who send an invoice to the customer.

Organizations have many such processes, and workflow systems aim to automate much of the process using electronic forms, which are forwarded to the relevant person based on pre-coded rules.

13. Who are stakeholders? What roles do they play?

A person, group or organization that has interest or concern in an organization. Stakeholders can affect or be affected by the organization's actions, objectives and policies.

Some examples of key stakeholders are creditors, directors, employees, government (and its agencies), owners (shareholders), suppliers, unions, and the community from which the business draws its resources. Not all stakeholders are equal. A company's customers are entitled to fair trading practices but they are not entitled to the same consideration as the company's employees.

An example of a negative impact on stakeholders is when a company needs to cut costs and plans a round of layoffs.

14. **What is meant by socio technical models?**

Socio technical systems (STS) in organizational development is an approach to complex organizational work design that recognizes the interaction between people and technology in workplaces. The term also refers to the interaction between society's complex infrastructures and human behavior. In this sense, society itself, and most of its substructures, are complex socio technical systems

15. **What is CUSTOM?**

CUSTOM is a socio-technical methodology designed to be practical to use in small organizations

It is based on the User Skills and Task Match (USTM) approach, developed to allow design teams to understand and fully document user requirements

CUSTOM focusses on establishing stakeholder requirements: all stakeholders are considered, not just the end-users.

16. **What is open system task analysis (OSTA)?**

OSTA attempts to describe what happens when a technical system is introduced into an organizational work environment. Like CUSTOM, OSTA specifies both social and technical aspects of the system. However, whereas in CUSTOM these aspects are framed in terms of stakeholder perspectives, in OSTA they are captured through a focus on tasks.

17. **What is ethnographic approach?**

The ethnographic approach differs markedly from the approach of participatory design.
In participatory design the workers come out of their work situation, either physically or mentally, and share the design task with the professional designers – effectively the workers become designers. The participatory designer enters into the subjective experience of the workplace. Ethnographic and other situated approaches take the analyst into the workplace, while retaining a level of objectivity.

18. **Define speech act theory.**

Speech-act theory is a subfield of pragmatics concerned with the ways in which words can be used not only to present information but also to carry out actions.
A speech act in linguistics and the philosophy of language is an utterance that has performative function in language and communication. Speech acts are commonly taken to include such acts as promising, ordering, greeting, warning, inviting and congratulating.

19. **What is meant by text based communication?**

The text-based communication in groupware systems is acting as a speech substitute, and, thus, there are some problems adapting between the two media.
There are four types of textual communication in current groupware:

- discrete – directed message as in email. There is no explicit connection between different messages, except in so far as the text of the message refers to a previous one.
- linear – participants' messages are added in (usually temporal) order to the end of a single transcript.
- non-linear – when messages are linked to one another in a hypertext fashion.
- spatial – where messages are arranged on a two-dimensional surface.

20. Differentiate linear text vs. hyper text in communication.

linear text : The asynchronous reader trying to catch up with a conversation, a linear transcript is clearly easier, but it is precisely in more asynchronous settings where overlap in linear text is most likely to cause confusion.

Hyper Text: The problems of pace may be partially solved in a hypertext. Multiplexed messages can be represented as updates to several parts of the hypertext, thus reducing the likelihood of breakdown and lost topics.

21. What is common ground?

Common ground is a technique for facilitating interpersonal relationships. In order to find common ground between parties, participants must search for signals of recognition, which are often subtle and cause for misunderstanding. Generally, smiles, bland faces, or frowns can be the positive, neutral or negative signals. When verbal communication is possible, the participants can speak and then listen.

22. What is meant by group dynamics?

Group dynamics is a system of behaviors and psychological processes occurring within a social group (intragroup dynamics), or between social groups (intergroup dynamics). The study of group dynamics can be useful in understanding decision-making behaviour, tracking the spread of diseases in society, creating effective therapy techniques, and following the emergence and popularity of new ideas and technologies. Group dynamics are at the core of understanding racism, sexism, and other forms of social prejudice and discrimination. These applications of the field are studied in psychology, sociology, anthropology, political science, epidemiology, education, social work, business, and communication studies.

23. What is task decomposition?

Task decomposition which looks at the way a task is split into subtasks, and the order in which these are performed.

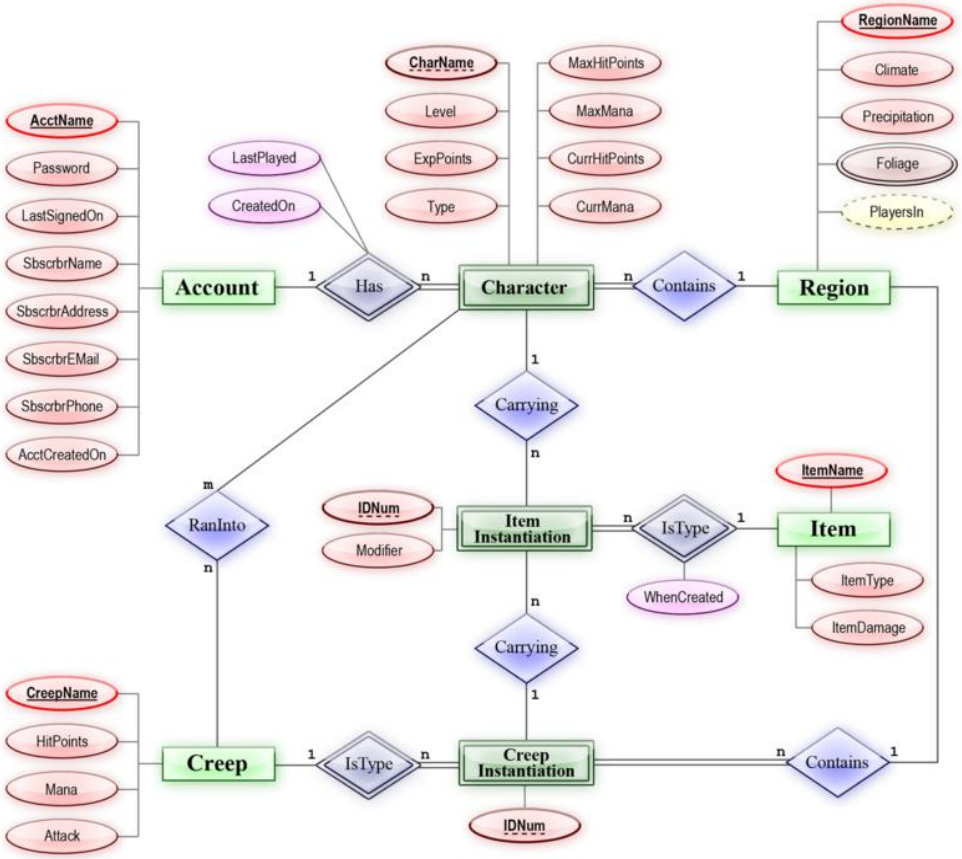
24. What is knowledge based analysis?

Knowledge-based task analysis begins by listing all the objects and actions involved in the task, and then building taxonomies of them.Taxonomies are similar to the sort of hierarchical descriptions we often find in biology: animals are invertebrates or vertebrates, vertebrates are fish, birds, reptiles, amphibians or mammals, etc. The aim is to understand the knowledge needed to perform a task and thus to help in the production

of teaching materials and in assessing the amount of common knowledge between different tasks.

25. What is meant by entity relationship based techniques?

Entity–relationship modeling is an analysis technique usually associated with database design and more recently object-oriented programming. When adopted for task analysis the major differences are in the kinds of entities modeled. In database and object-oriented design, the entities chosen for analysis will be those which are expected to be represented in the resulting computer system.



26. What is static and dynamic web content?

Static Web Pages

Static Web pages display the exact same information whenever anyone visits it. Static Web pages do not have to be simple plain text. They can feature detailed multimedia design and even videos. However, every visitor to that page will be greeted by the exact same text, multimedia design or video every time he visits the page until you alter that page's source code.

Dynamic Web Pages

Dynamic Web pages are capable of producing different content for different visitors from the same source code file. The website can display different content based on what operating system or browser the visitor is using, whether she is using a PC or a mobile

device, or even the source that referred the visitor. A dynamic Web page is not necessarily better than a static Web page. The two simply serve different purposes.

27. Define animation.

A simulation of movement created by displaying a series of pictures, or frames. Cartoons on television is one example of animation. Animation on computers is one of the chief ingredients of multimedia presentations. There are many software applications that enable you to create animations that you can display on a computer monitor.

28. How to make navigation easier?

- Avoid irrelevant links
- Reveal structure
- Leave breadcrumbs
- Don't bury information
- Don't be mysterious
- Provide help.

29. Define web server and web client.

A **Web server** is a program that uses HTTP (Hypertext Transfer Protocol) to serve the files that form Web pages to users, in response to their requests, which are forwarded by their computers' HTTP clients. Dedicated computers and appliances may be referred to as Web servers as well.

The Web client is a client-side component within the Java 2 Platform Enterprise Edition (J2EE), a distributed multi-tiered application model used for building and developing enterprise applications. Client-side components are typically computer applications running on a user's computer and connect to a server. These components perform client-side operations as they might need access to information available only on the client side, like user input, or because the server lacks the processing power necessary in such operations.

30. Differentiate automatic generation and batch generation

Automatic Generation	Batch Generation
• The ATG platform automates this process through the Web Service Creation Wizard in the Dynamo Administration UI. • The wizard automatically generates the necessary classes, WSDL documents, and deployment descriptors, and packages them in EAR and WAR files.	• for slow varying data – update local database – periodically generate pages and upload • many technologies – C, Java, HyperCard, Visual Basic

HCI

UNIT 4

PART A

1. **List some of the open source platforms used for mobile HCI development.**
   - Symbian OS
   - Android
   - Windows Mobile
   - Palm OS
   - Linux
   - Mac OS X

2. **List some of the licensed platforms used for mobile HCI development.**
   - Java Micro Edition (Java ME)
   - Binary Runtime Environment for Wireless (BREW)
   - Windows Mobile
   - Linux-based mobile platform(LIMO)

3. **What is meant by COCOA touch?**

   Cocoa Touch is the API used to create native applications for the iPhone and iPod touch. Cocoa Touch applications must be submitted and certified by Apple before being included in the App Store. Once in the App Store, applications can be purchased, downloaded, and installed over the air or via a cable-connected computer.

4. **What is web runtimes?**

   - Installs a launch icon in the native operating system.
   - Can verify and then launch an app from the native operating system in a frameless window.
   - Shows the app in the native environment as a typical running application (so that application switching and monitoring work as expected).
   - Integrates with device capabilities. The WebAPI project is progressing towards supporting these APIs directly in Gecko
   - Provides a seamless launch experience. When an app is launched, it can check that its receipt is valid (if the app uses a receipt).

5. **List different application framework used in mobile HCI.**
   - Java
   - Series 60(Symbian OS)
   - BREW
   - Flash Lite
   - Windows Mobile
   - Cocoa Touch
   - Android SDK

- Web Runtimes (WRTs)
- WebKit

6. **What is meant by web kit?**

WebKit is a browser technology, so applications can be created simply by using web technologies such as HTML, CSS, and JavaScript. WebKit also supports a number of recommended standards not yet implemented in many desktop browsers. Applications can be run and tested in any WebKit browser, desktop, or mobile device.

7. **List out Mobile application medium types.**

The mobile medium type is the type of application framework or mobile technology that presents content or information to the user. It is a technical approach regarding which type of medium to use; this decision is determined by the impact it will have on the user experience. The technical capabilities and capacity of the publisher also factor into which approach to take.

8. **List pros and cons of SMS.**

The pros of SMS applications include:

- They work on any mobile device nearly instantaneously.
- They're useful for sending timely alerts to the user.
- They can be incorporated into any web or mobile application.
- They can be simple to set up and manage.

The cons of SMS applications include:

- They're limited to 160 characters.
- They provide a limited text-based experience.
- They can be very expensive.

9. **What is meant by mobile web site?**

Mobile websites often have a simple design and are typically informational in nature, and interactive elements you might expect from a desktop site. Mobile websites have made up the majority of what we consider the mobile web for the past decade, starting with the early WML-based sites and moving to today's websites, with a richer experience that more closely resembles the visual aesthetic users have come to expect with web content.

10. **What are mobile web widgets?**

A web widget is a software widget for the web. It's a small application with limited functionality that can be installed and executed within a web page by an end user. A widget has the role of a transient or auxiliary application, meaning that it just occupies a portion of a webpage and does something useful with information fetched from other websites and displayed in place. Other terms used to describe web widgets include: portlet, web part, gadget, badge, module, snippet and flake. Widgets are typically created in DHTML or Adobe Flash.

11. **List some game applications in mobile HCI.**

Mobile games tend to be small in scope and many priorities innovative design and ease of play over visual spectacle. Storage and memory limitations place constraints on file size that presently rule out the direct migration of many modern PC and console games to mobile.

- Location-based mobile games
- Multiplayer mobile games

12. What is mobile application media matrix?

To aid in comparing and contrasting which of these mobile application media is best for your mobile product

	Device Support	**Complexity**	**User Experience**	**Language**	**Offline support**	**Device features**
SMS	All	Simple	Limited	N/A	No	None
Mobile websites	All	Simple	Limited	HTML	No	None
Mobile web widgets	Some	Medium	Great	HTML	Limited	Limited
Mobile web applications	Some	Medium	Great	HTML	Limited	Limited
Native applications	All	Complex	Excellent	Various	Yes	Yes
Games	All	Complex	Excellent	Various	Yes	Yes

13. Differentiate application content and utility content

Application Content

- Application context deals with the user experience
- Applications can be presented in a variety of ways, ranging from a simple task-based utility to an experience meant to consume the user's focus and attention

Utility Content

- Simple user experience metaphor that is meant to address short, task-based scenarios.
- Information is meant to be presented in a minimal fashion, often using the least amount of user input as possible.

14. What is productivity application content?

The productivity application context is used for content and services that are heavily task-based and meant to increase the users' sense of efficiency. Productivity applications are often very structured, presenting information in a defined hierarchy and often using the folder or group metaphor to define a sense of order to the user.

15. What is meant by mobile information architecture?

The mobile information architecture defines not just how your information will be structured, but also how people will interact with it. This is made especially tricky when you consider that different devices have different capabilities and therefore different interaction models. Take the

way people interact with their devices: for example, a touch device on which the user literally points and clicks, or a more basic device on which the user uses the directional pad to navigate to the desired location.

- The structural design of shared information environments
- The combination of organizations, labeling, search, and navigation systems within websites and intranets
- The art and science of shaping information products and experiences to support usability and findability
- An emerging discipline and community of practice focused on bringing principles of design and architecture to the digital landscape

16. What are the ways to reduce mistakes?

Mistakes occur when a user has developed a mental model of the interface that isn't correct, and forms a goal that doesn't suit the situation well.

- Learn from other's mistakes
- Do your research first
- Have a plan
- Follow standards and use templates
- Communicate and coordinate with others
- Allow enough time
- Reuse proven code
- Use checklists
- Test and carefully review your work
- Test again with a third party

17. What is meant by click streams?

Clickstream is a term used for showing the behavior on websites, displaying the order in which users travel through a site's information architecture, usually based on data gathered from server logs. Clickstreams are usually historical, used to see the flaws in your information architecture, typically using heat-mapping or simple percentages to show where your users are going.

18. What is meant by wireframes

Wireframes are a way to lay out information on the page, also referred to as information design. Site maps show how our content is organized in our informational space; wireframes show how the user will directly interact with it. Wireframes are like the peanut butter to the site map jelly in our information architecture sandwich.

19. Differentiate context prototype and HTML prototype

Context prototype: The prototype mechanism is a minefield of problems waiting to trap the ambitious JavaScript programmer especially so when combined with a serious object oriented approach. We tackle the puzzle of the missing private variables.

HTML prototype: Prototyping tools can be restrictive and it's becoming more important that designers know how to code up their concepts

20. Define design myth.

A little secret about interactive design is that people don't respond to the visual aesthetic as much as you might think. What colors you use, whether you use square or rounded corners, or, gradients or flat backgrounds, helps build first impressions, but it doesn't do too much to improve the user's experience.

21. What Is Mobile 2.0?

Mobile 2.0, refers to a perceived next generation of mobile internet services that leverage the social web, or what some call Web 2.0. The social web includes social networking sites and wikis that emphasise collaboration and sharing amongst users.

Mobile Web 2.0, with an emphasis on Web, refers to bringing Web 2.0 services to the mobile internet, Mobile 2.0 refers to services that integrate the social web with the core aspects of mobility – personal, localized, always-on and ever-present. These services are appearing on wireless devices such as Smartphones and multimedia feature phones that are capable of delivering rich, interactive services as well as being able to provide access and to the full range of mobile consumer touch points including talking, texting, capturing, sending, listening and viewing.

22. How Rich interactions kill battery life?

JavaScript and Ajax have been ignored because using an Ajax-based web application on your phone can drain your battery at a rate of four to five times your normal power consumption.

• JavaScript consumes more processor power and therefore more battery life.

• Ajax apps fetch more data from the network, meaning more use of the radio and more battery life.

23. How Mobile Widgets Are the Next Big Thing

A mobile widget is a small portable application that works outside of the browser and provides easy access to the mobile Internet. They provide a narrow range of functionalities within a single context.

The advantage of widgets is that users can place them where it is convenient – for example of their home screen – thus allowing for easy access to the specific internet content without having to browse to a website.

24. What is meant by Mobile Design Tent-Pole?

Executives like to use the term "tent-pole" to describe their movies and television shows. The term has dual meanings: one is business, and the other creative. The business goal of a tent-pole production is to support or prop up the losses from other productions.

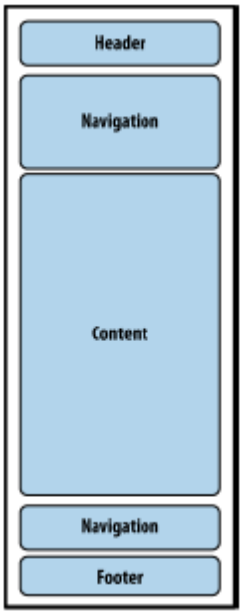
25. Define Typography.

The term typography is also applied to the style, arrangement, and appearance of the letters, numbers, and symbols created by the process. Type design is a closely related craft, sometimes considered part of typography; most typographers do not design typefaces, and some type designers do not consider themselves typographers.

26. List out Design tools and interface toolkits

Mobile framework	Design tool	Interface toolkits
Java ME	Photoshop, NetBeans	JavaFX, Capuchin
BREW	Photoshop, Flash	BREW UI toolkit, uiOne, Flash
Flash Lite	Flash	Flash Lite
iPhone	Photoshop Interface Builder	Iphone SDK
Android	Photoshop, XML-based Themes	Android SDK
Palm web OS	Photoshop, HTML,CSS ,JavaScript	Mojo SDK

27. Show typical flow of information on mobile devices.



UNIT 5

PART A

1. **What are the Events resent in drag and drop?**
    - Page Load
    - Mouse Hover
    - Mouse Down
    - Drag Initiated
    - Drag Leaves Original Location
    - Drag Re-Enters Original Location
    - Drag Enters Valid Target
    - Dragging over a valid drop target.
    - Drag Exits Valid Target
    - Dragging back out of a valid drop target.
    - Drag Enters Specific Invalid Target
    - Dragging over an invalid drop target.
    - Drag Is Over No Specific Target
    - Drag Hovers Over Valid Target
    - Drag Hovers Over Invalid Target
    - Drop Accepted
    - Drop occurs over a valid target and drop has been accepted.
    - Drop Rejected
    - Drop on Parent Container

2. **Who are the Actors in drag and drop?**
    During each event you can visually manipulate a number of actors. The page elements available include:
    • Page (e.g., static messaging on the page)
    • Cursor
    • Tool Tip
    • Drag Object (or some portion of the drag object, e.g., title area of a module)
    • Drag Object's Parent Container
    • Drop Target

3. **What is the Purpose of Drag and Drop?**
    Drag and drop can be a powerful idiom if used correctly. Specifically it is useful for:
    Drag and Drop Module: Rearranging modules on a page.
    Drag and Drop List: Rearranging lists.
    Drag and Drop Object: Changing relationships between objects.
    Drag and Drop Action: Invoking actions on a dropped object.
    Drag and Drop Collection: Maintaining collections through drag and drop.

4. **What is meant by Placeholder Target?**

Net vibes uses a placeholder (hole with dashed outline) as the drop target. The idea is to always position a hole in the spot where the drop would occur. When module starts dragging, it gets "ripped" out of the spot. The hole serves as a placeholder and always marks the spot that the dragged module will land when dropped

5. **What is meant by Insertion Target?**
   Insertion Target is to keep the page as stable as possible and only move around an insertion target (usually an insertion bar).

6. **Define Boundary-based placement.**
   Boundary-based placement. Since most sites that use placeholder targeting drag the module in its original size, targeting is determined by the boundaries of the dragged object and the boundaries of the dragged-over object. The mouse position is usually ignored because modules are only drag gable in the title (a small region). Both Net vibes and iGoogle take the boundary-based approach.

7. **What is meant by Drag Rendering?**
   Drag Rendering shows how objects to be rendered with a slight transparency (ghost) Or should it be shown fully opaque? The transparency (ghosting) effect communicates that the object being dragged is actually a representation of the dragged object. It also keeps more of the page visible, thus giving a clearer picture of the final result of a drop.

8. **What is meant by Drag and Drop List?**
   The Drag and Drop List pattern defines interactions for rearranging items in a list.
   Drag and Drop List, use the mouse position to control where the item will be dropped.
   If possible, drag the items in a list in real time using the placeholder target approach.
   - Use the mouse position for drag target positioning.
   - If the goal is speed of dragging or if dragged items are large, consider using the insertion target approach, as rendering an insertion bar is inexpensive compared to dynamically rearranging the list.
   - Since drag and drop in lists is not easily discoverable, consider providing an alternate way to rearrange the list.
   - When the user rearranges the list with an alternate method, use that moment for a onetime advertisement for drag and drop.

9. **What is meant by Non–drag and drop alternative?**
   Drag and drop, the Netflix queue actually supports two other ways to move objects around:
   - Edit the row number and then press the "Update DVD Queue" button.
   - Click the "Move to Top" icon to pop a movie to the top.
   - Hinting at drag and drop

10. **What is meant by Hinting at drag and drop?**
    When the user clicks the "Move to Top" button, Netflix animates the movie as it moves up. But first, the movie is jerked downward slightly and then spring-loaded to the top The combination of the downward jerk and then the quick animation to the top gives a subtle clue that the object is

drag gable. This is also an interesting moment to advertise drag and drop. After the move to top completes, a simple tip could appear to invite users to drag and drop. The tip should probably be shown only once, or there should be a way to turn it off. Providing an invitation within a familiar idiom is a good way to lead users to the new idiom.

11. Differentiate Dragged object versus drop target.

Drag initiated: When a message drag is initiated, a snippet of the message is shown, along with an icon denoting whether a drop can be made.

Valid drop target: When the dragged message may be dropped, the icon portion of the dragged object changes from a red invalid sign to a green checkmark.

12. What is meant by Drag and Drop Action?

The basic sequence involved in drag and drop is:

- Move the pointer to the object
- Press, and hold down, the button on the mouse or other pointing device, to "grab" the object
- "Drag" the object to the desired location by moving the pointer to this one
- "Drop" the object by releasing the button

13. Differentiate Artificial Visual Construct and Natural Visual Construct.

Artificial Visual Construct: drag and drop can sometimes drive the design of an interface instead of being an extension of a natural interface. These interactions are almost always doomed, as they are the tail wagging the proverbial dog. Rating movies, books, and music is a common feature found on many sites.

Natural Visual Construct: dragging routes in Google Maps, we pointed out that drag and drop worked well since it fit with the natural visual representation of routes on the map, panning around in a map is a natural visual metaphor. Extending the visual space to a larger virtual space is a natural fit.

14. What is meant by Drag and Drop Collection?

A variation on dragging objects is collecting objects for purchase, bookmarking, or saving into a temporary area. This type of interaction is called Drag and Drop Collection. Drag and drop is a nice way to grab items of interest and save them to a list.

15. What are the Challenges present in Drag and Drop?

There are four broad areas where Drag and Drop may be employed: Drag and Drop Module, Drag and Drop List, Drag and Drop Object, and Drag and Drop Action. And in each area, there are a large number of interesting moments that may be handled in numerous ways. Being consistent in visual and interaction styles across all of these moments for all of these types of interactions is a challenge in itself. And keeping the user informed throughout the process with just the right amount of hints requires design finesse.

16. What is meant by Toggle Selection?

Toggle Selection: Checkbox or control-based selection.

Checkboxes and toggle buttons are the familiar interface for selecting elements on most web pages. The way to select an individual mail message is through the row's checkbox. Clicking on the row itself does not select the message.

17. What is meant by Scrolling versus paging?

- A scrolling page layout is not better than paging when it comes to survey participation and survey completion rates. Conversely, paging is not better than scrolling when it comes to item non-response.
- Scrolling does allow people to complete surveys faster and with fewer technical difficulties; therefore, respondents evaluate their experiences with scrolled surveys more highly.
- Both text messages and e-mail are effective in recruiting people to complete online surveys, but those responding to text-messages have higher break-off rates.
- There are no differences when it comes to laying out answer scales vertically versus horizontally, so either method will work.

18. Differentiate Collected Selection and Object Selection.

Collected Selection is a pattern for keeping track of selection as it spans multiple pages. The selections are remembered for each page.

Object Selection is when selection is made directly on objects within the interface. Object Selection can be extended by holding down the Shift key while clicking on a different item.

19. What is meant by Desktop-style selection?

Web pages, keyboard events have rarely made sense since they are also shared with the browser. All of this is changing as the capabilities of web technologies continue to improve.

20. What is meant by Hybrid Selection?

The drag includes both the selected element and the unselected element. Since only one is shown as selected, this creates a confusing situation. This occurs because three things are happening in the same space:

• Toggle Selection is used for selecting bookmarks for editing, deleting, etc.
• Object Selection is used for initiating a drag drop.
• Mouse click is used to open the bookmark on a separate page.

21. What is meant by Interaction in Context?

The topics in this section provide an overview of support for Interaction Context in application development, Interaction Context enables the applications and UI frameworks to support multiple, concurrent interactions by providing gesture detection and manipulation processing.

22. Define Fitts's Law.

Fitts's law is a predictive model of human movement primarily used in human computer interaction and ergonomics. This scientific law predicts that the time required to rapidly move to a target area is a function of the ratio between the distance to the target and the width of the target. Fitts's law is used to model the act of pointing, either by physically touching an object with

a hand or finger, or virtually, by pointing to an object on a computer monitor using a pointing device.

23. Differentiate Hover-Reveal Tools and Toggle-Reveal Tools.

Hover-Reveal Tools: Show Contextual Tools on mouse hover.

Toggle-Reveal Tools: A master switch to toggle on/off Contextual Tools for the page.

24. What is meant by Multi-Level Tools?

Multi-Level Tools: Progressively reveal actions based on user interaction.

25. What is meant by Radial menus?
    - Experienced users can rely on muscle memory rather than having to look directly at the menu items.
    - the proximity and targeting size make the menu easy to navigate since the revealed menu items are all equally close at hand

26. What is meant by Dialog Overlay?

Dialog Overlay contains important information that the user should not ignore. Both the Netflix Purchase dialog and the Flickr Rotate dialog are good candidates for the Lightbox Effect

27. What is meant by Light box Effect?

Lightbox is a JavaScript library that displays images and videos by filling the screen, and dimming out the rest of the web page

28. What is meant by Detail Overlay?

The Detail Overlay allows an overlay to present additional information when the user clicks or hovers over a link or section of content. Toolkits now make it easier to create overlays across different browsers and to request additional information from the server without refreshing the page.

29. What is meant by Input Overlay?

Input Overlay is a lightweight overlay that brings additional input information for each field tabbed into. American Express uses this technique in its registration for premium cards such as its gold card

30. What is meant by Dialog Inlay?

Dialog Inlay as a way to reveal customization controls for its home page. Inlays get around this problem by inserting themselves directly into the context of the page.

Separate page to customize the home page appearance, the user can make changes and view the effects directly.

Dialog Inlay reveals its home page customization tools

31. What is meant by List Inlay?

The List Inlay works as an effective way to hide detail until needed while at the same time preserving space on the page for high-level overview information. List Inlay pattern shows only one open panel in a list at a time

32. What is meant by Detail Inlay?

Detail Inlay pattern shows a carousel of photos when the user clicks on the "View photos" link. It uses a Detail Overlay to blow up a thumbnail when clicked on.

33. How to combine inlays and overlays?

Roost's solution was to combine several patterns. First, it uses the Hover Reveal, a Contextual Tools pattern, to reveal a set of tools when the user hovers over a listing. Second, it uses the Detail Inlay pattern to show a carousel of photos when the user clicks on the "View photos" link. And finally, it uses a Detail Overlay to blow up a thumbnail when clicked on.

34. What is meant by Virtual Scrolling?

The virtual scrolling feature of datagrid can be used to display large amounts of records without paging. When scrolling with the vertical scrollbar, the datagrid executes ajax requests to load and refresh the existing records. The overall behavior is smooth and with no flicker.

35. What is meant by Inline Paging?

Inline Paging feels like the user never leaves the page even though new virtual pages of results are being brought into view.

Inline Paging can also be useful when reading news content online

A set number of messages is displayed on the page.

36. **What is meant by Scrolled Paging**?

The virtual scrolling feature of data grid can be used to display large amounts of records without paging. When scrolling with the vertical scrollbar, the data grid executes ajax requests to load and refresh the existing records. The overall behaviour is smooth and with no flicker.

37. **What is meant by Virtual Panning**?

A great place for Virtual Panning is on a map. Virtual panning the canvas only moves while the mouse is dragging it around. With flicking, if the user starts the dragging operation and releases, the canvas will continue moving with some momentum.

38. What is meant by Zoomable User Interface?

A Zoom able User Interface (ZUI) way to create a virtual canvas.

ZUI interactions is in a concept demo for Firefox on the mobile

ZUIs provide the ultimate virtual canvas. By extending the concept of the page, the user never actually leaves the virtual page.

39. What is meant by Google Blogger?

Blogger is a blog-publishing service that allows multi-user blogs with time-stamped entries. It was developed by Pyra Labs, which was bought by Google in 2003. Generally, the blogs are

hosted by Google at a subdomain of blogspot.com. Blogger is Google's free tool for creating blogs. It can be found on the web at http://www.blogger.com.

40. Define Magic Principle.

Alan Cooper had brought a wonderful technique for getting away from a technology-driven approach and discovering the underlying mental model of the user. He calls it the "magic principle.

41. What is meant by Interactive Single-Page Process?

The Gap accomplishes this kind of product selection in a single page using Interactive Single-Page Process.

Broadmoor Hotel uses Interactive Single-Page Process for room reservations

42. What is meant by Inline Assistant Process?

The Gap employed an Inline Assistant Process pattern for its shopping cart when it re-launched its site

The Gap is betting that making it quick and easy to add items to the cart across four stores will equal more sales.

43. What is meant by Dialog Overlay Process?

Dialog Overlay Process to encapsulate a multi-step flow inside a Dialog Overlay.

Process Flow is meant to invoke delight

44. What is meant by Static Single-Page Process?

The user sees all the tasks needed to complete the full process.

Static Single-Page Process, many options are defaulted and a simplified form is presented to the user

Static Single-Page Process when you only have a few steps and want to avoid taking the chance that a user will quit while moving from page to page.