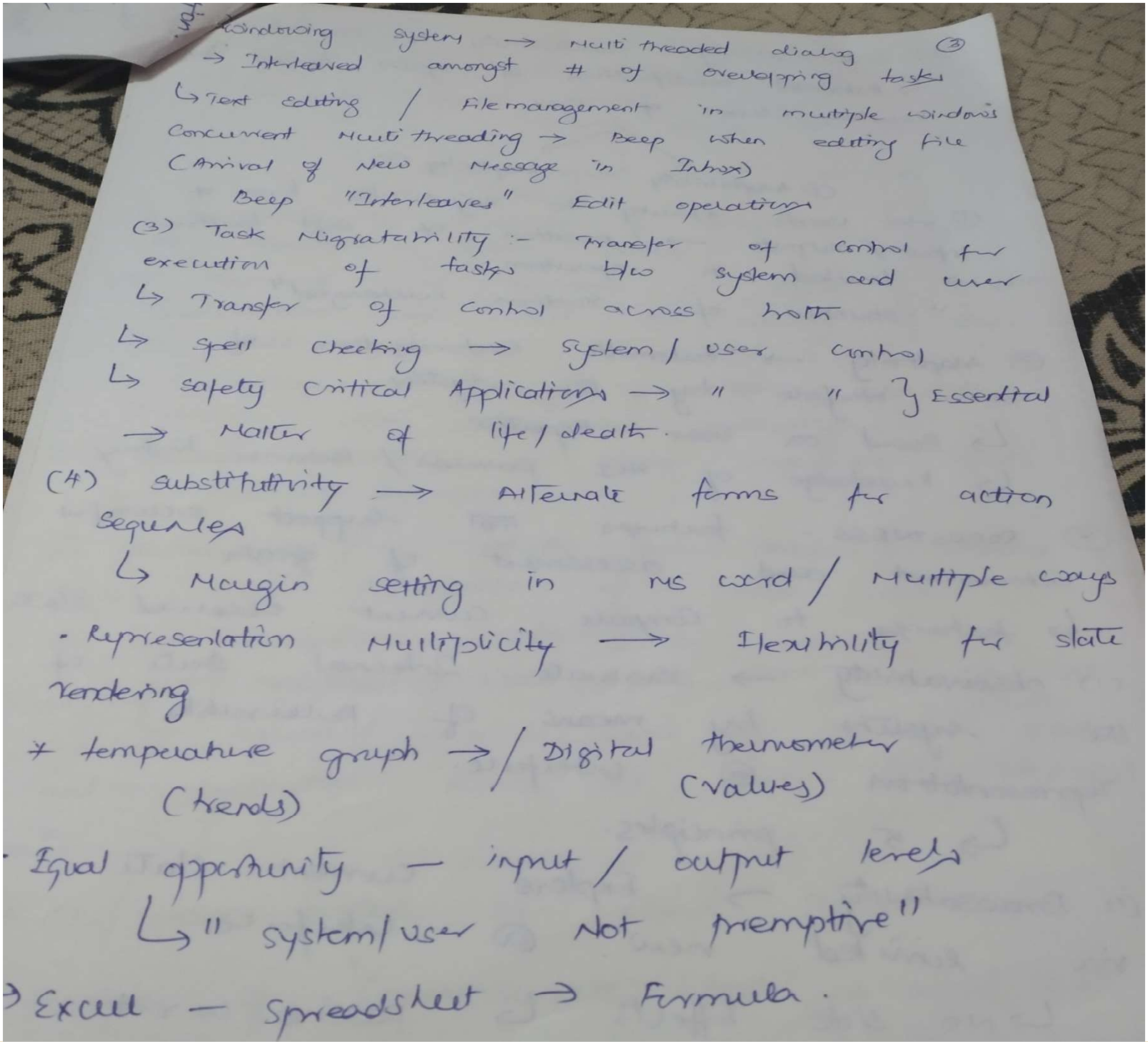

Windowing system → Multi threaded dialog ③
→ Interleaved amongst # of overlapping tasks
↳ Text editing / File management in multiple windows
Concurrent Multi threading → Beep when editing file
(Arrival of New Message in Inbox)
Beep "Interleaves" Edit operations
(3) Task Migratability :- Transfer of control for execution of tasks b/w system and user
↳ Transfer of control across both
↳ Spell Checking → System / User control
↳ Safety Critical Applications → " " } Essential
→ Matter of life / death.
(4) Substitutivity → Alternate forms for action sequences
↳ Margin setting in MS word / Multiple ways
• Representation Multiplicity → Flexibility for state rendering
* temperature graph → (trends) / Digital thermometer (values)
• Equal opportunity — input / output levels
↳ " system/user Not preemptive"
→ Excel — Spreadsheet → Formula.

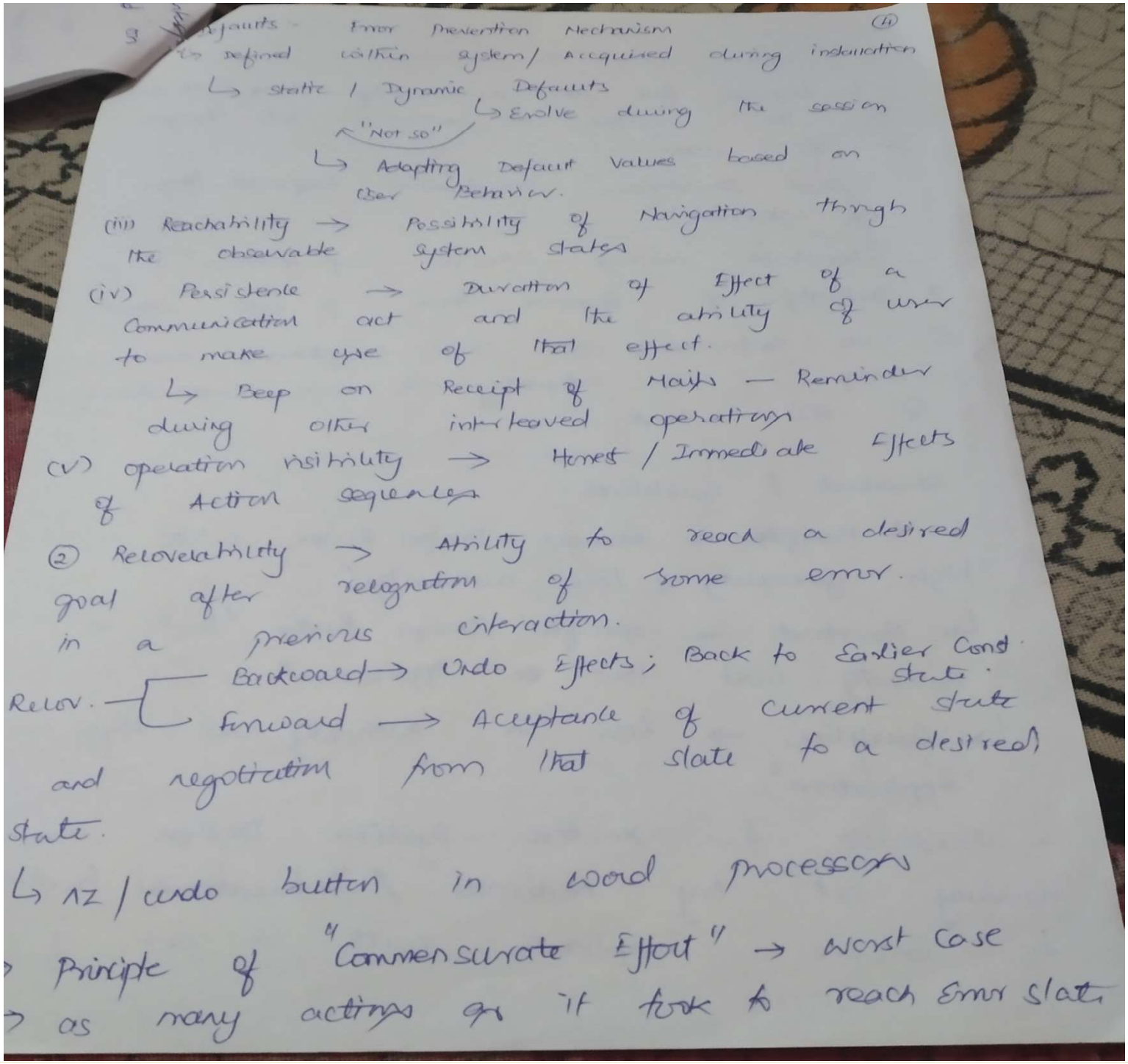
(5) Customizability :- Modifiability of User Interface
↳ Automated modifications of system based on knowledge (level) of user

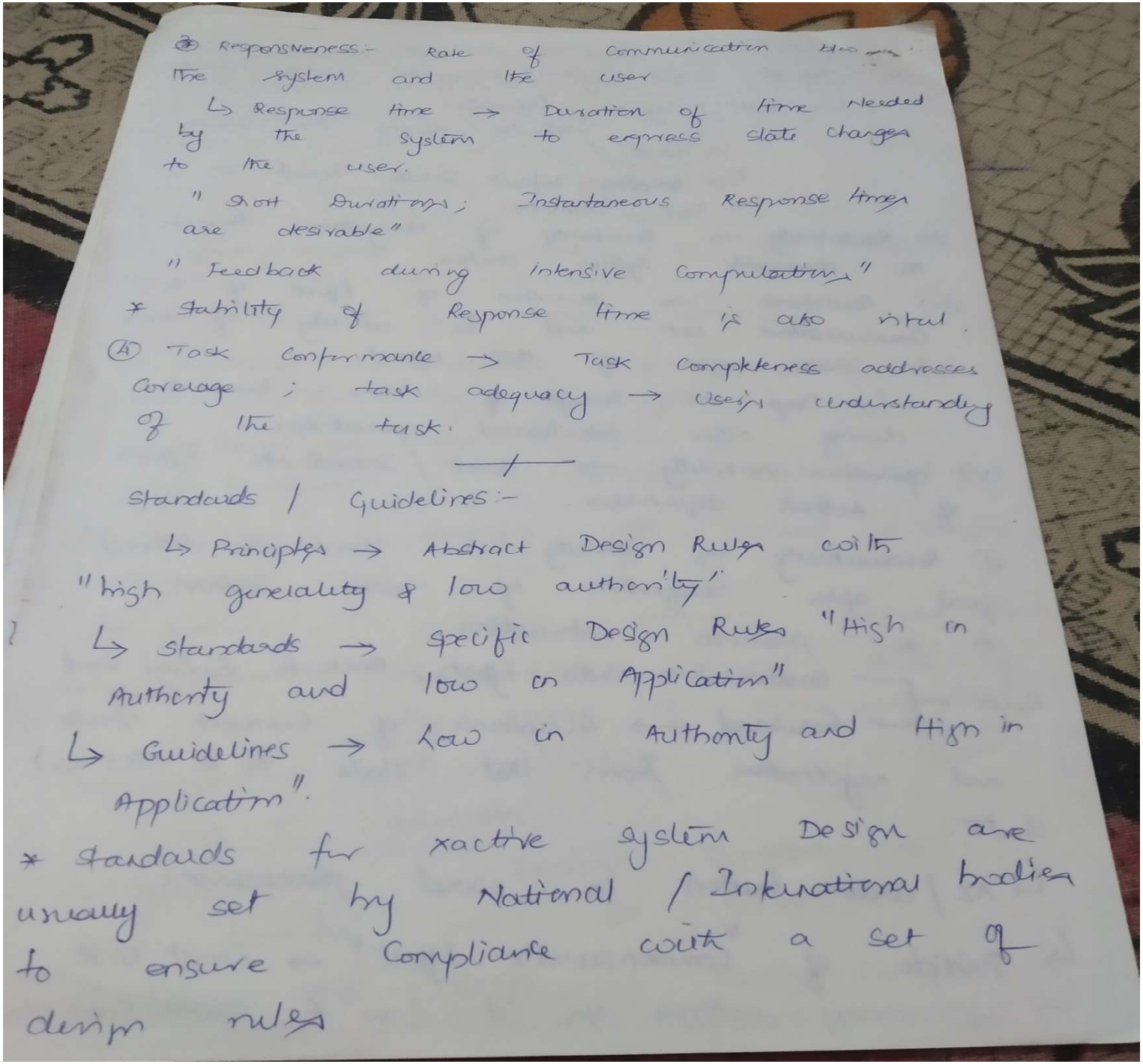
① Adaptability Adapting ②

① → User's Ability to adjust the form of input / output → position of soft buttons
etc; → limited in operation.
" structure of action unchanged"

② Adapting → Automatic customization of user interface by the system
↳ Based on user Expertise
↳ knowledge of HCI patterns / Behavior history

⑥ ROBUSTNESS :- features that support successful achievement and assessment of goals
↳ features to Compare current observed state
(i) observability → Evaluate Internal state of the system by means of perceivable representation @ interface.
↳ 5 principles.
(i) Browsability → Explore current state via limited view @ interface
↳ No side Effects ↳ passive w.r.t system state


Defaults - Error Prevention Mechanism
to defined within system / Acquired during installation
↳ static / Dynamic Defaults
↳ Evolve during the session
"Not so"
↳ Adapting Default Values based on User Behaviour.
(iii) Reachability → Possibility of Navigation through the observable system states
(iv) Persistence → Duration of Effect of a Communication act and the ability of user to make use of that effect.
↳ Beep on Receipt of Mails — Reminder during other interleaved operations
(v) operation visibility → Honest / Immediate Effects of Action sequences
② Recoverability → Ability to reach a desired goal after recognition of some error.
in a previous interaction.
Recov. — Backward → Undo Effects; Back to Earlier Cond. state.
forward → Acceptance of current state and negotiation from that state to a desired state.
↳ ^Z / undo button in word processors
Principle of "Commensurate Effort" → worst case
as many actions as it took to reach Error state



③ Responsiveness :- Rate of communication between the system and the user

↳ Response time → Duration of time needed by the system to express state changes to the user.

" Short Durations ; Instantaneous Response times are desirable"

" Feedback during intensive computations "

* Stability of Response time is also vital.

④ Task Conformance → Task Completeness addresses coverage ; task adequacy → user's understanding of the task.

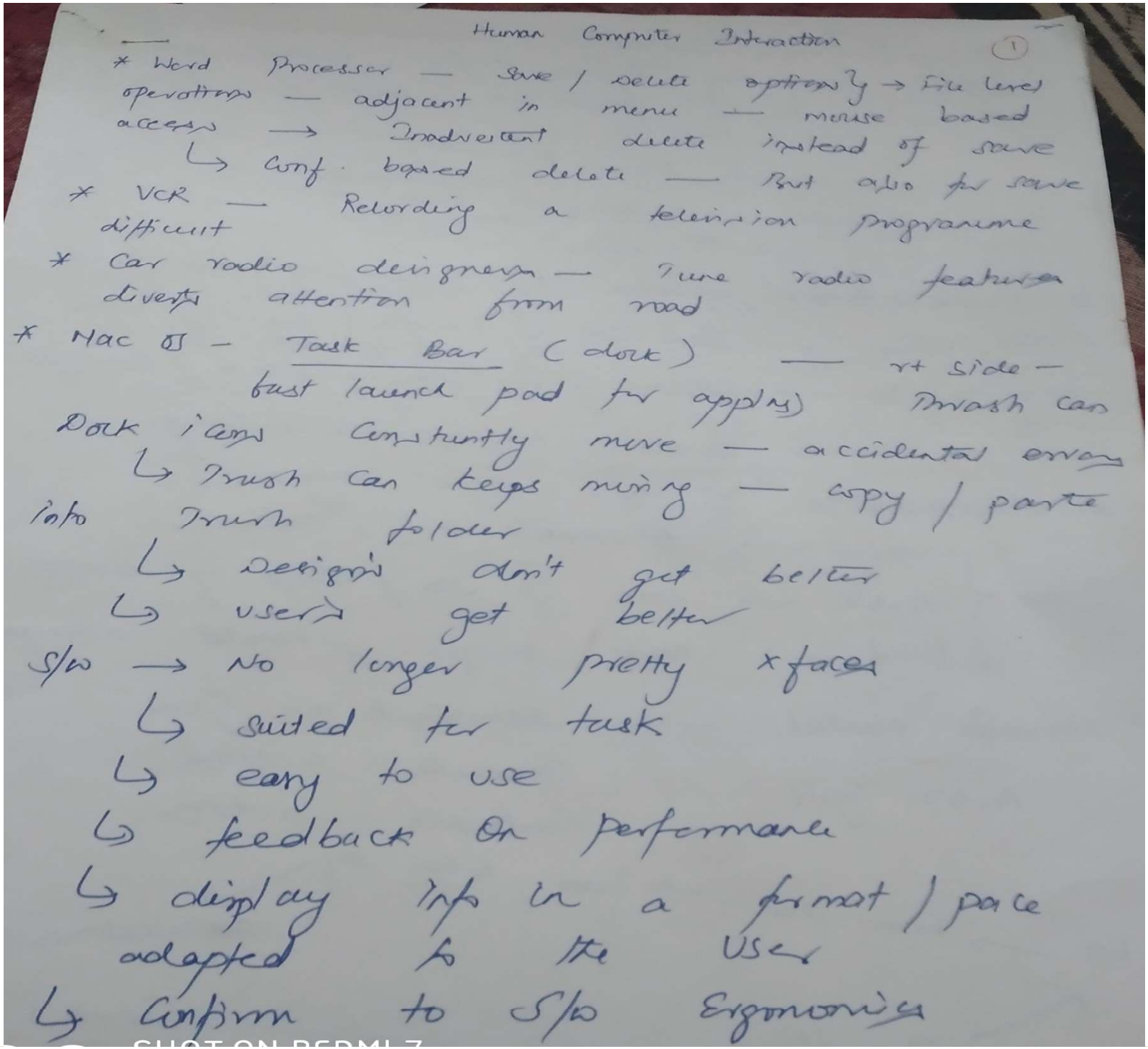
Standards / Guidelines :-

↳ Principles → Abstract Design Rules with "high generality & low authority"

↳ standards → specific Design Rules "High in Authority and low in Application"

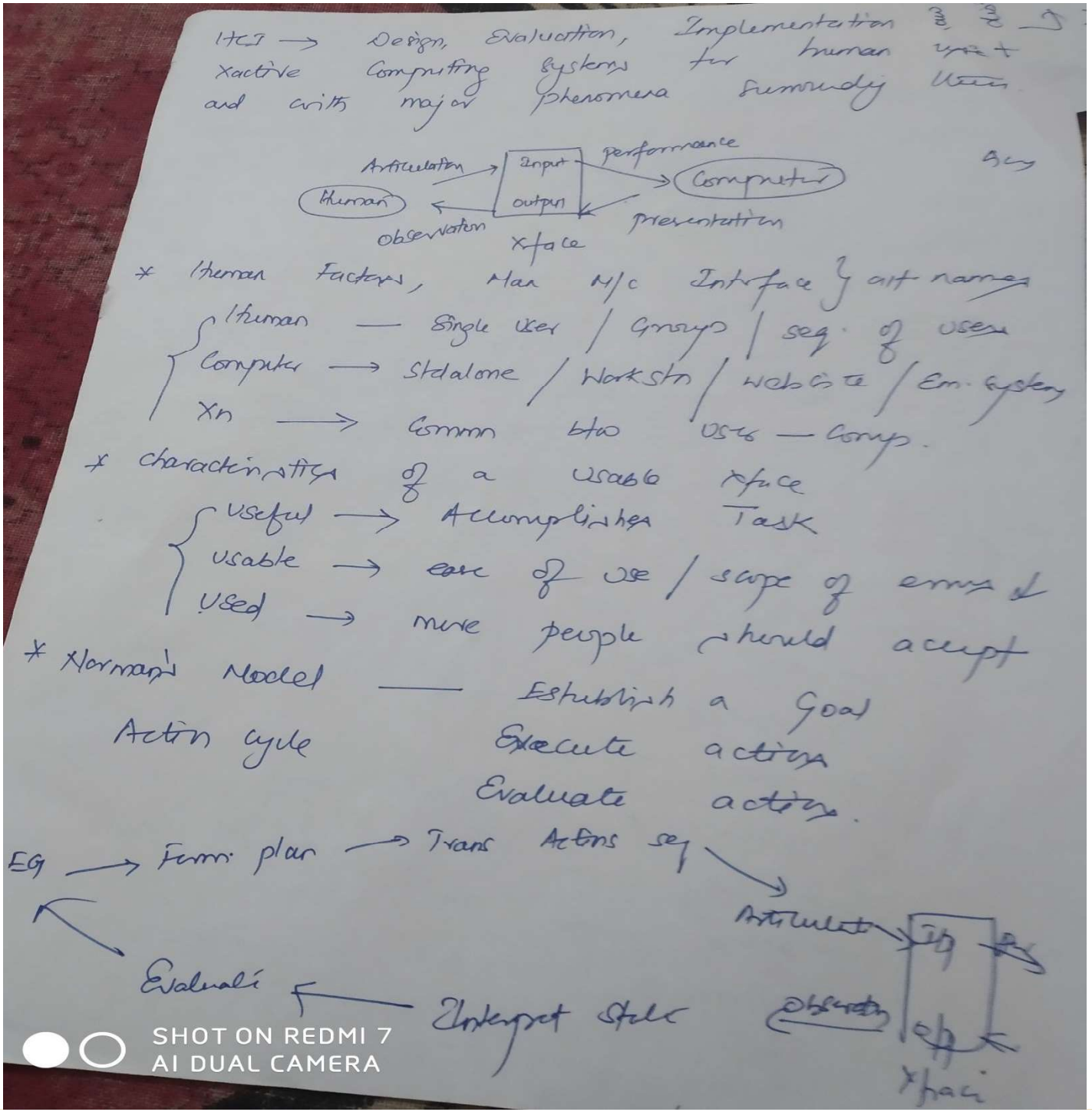
↳ Guidelines → Low in Authority and High in Application".

* standards for xactive system Design are usually set by National / International bodies to ensure Compliance with a set of design rules



Human Computer Interaction ①

* Word Processor — Save / delete options ↳ file level operations — adjacent in menu — mouse based access → Inadvertent delete instead of save
  ↳ Conf. based delete — But also for save
* VCR — Recording a television programme difficult
* Car radio designers — Tune radio features diverts attention from road
* Mac OS — Task Bar (dock) — rt side — fast launch pad for apps) Trash can
  Dock icons constantly move — accidental errors
  ↳ Trash can keeps rising — copy / paste into Trash folder
  ↳ Designs don't get better
  ↳ users get better
* S/w → No longer pretty x faces
  ↳ suited for task
  ↳ easy to use
  ↳ feedback on performance
  ↳ display info in a format / pace adapted to the user
  ↳ Confirm to S/w Ergonomics



Fitts' law → target hit time → fn of target size (4)
+ distance to be moved
↳ Simulation diff sized circles
/ diff sizes / 30 of dist / time / dia }.

Memory ← iconic (visual) —— persistence of ...
echoic (aural) —— repeat question
haptic (touch).

Sensory → short term (working).

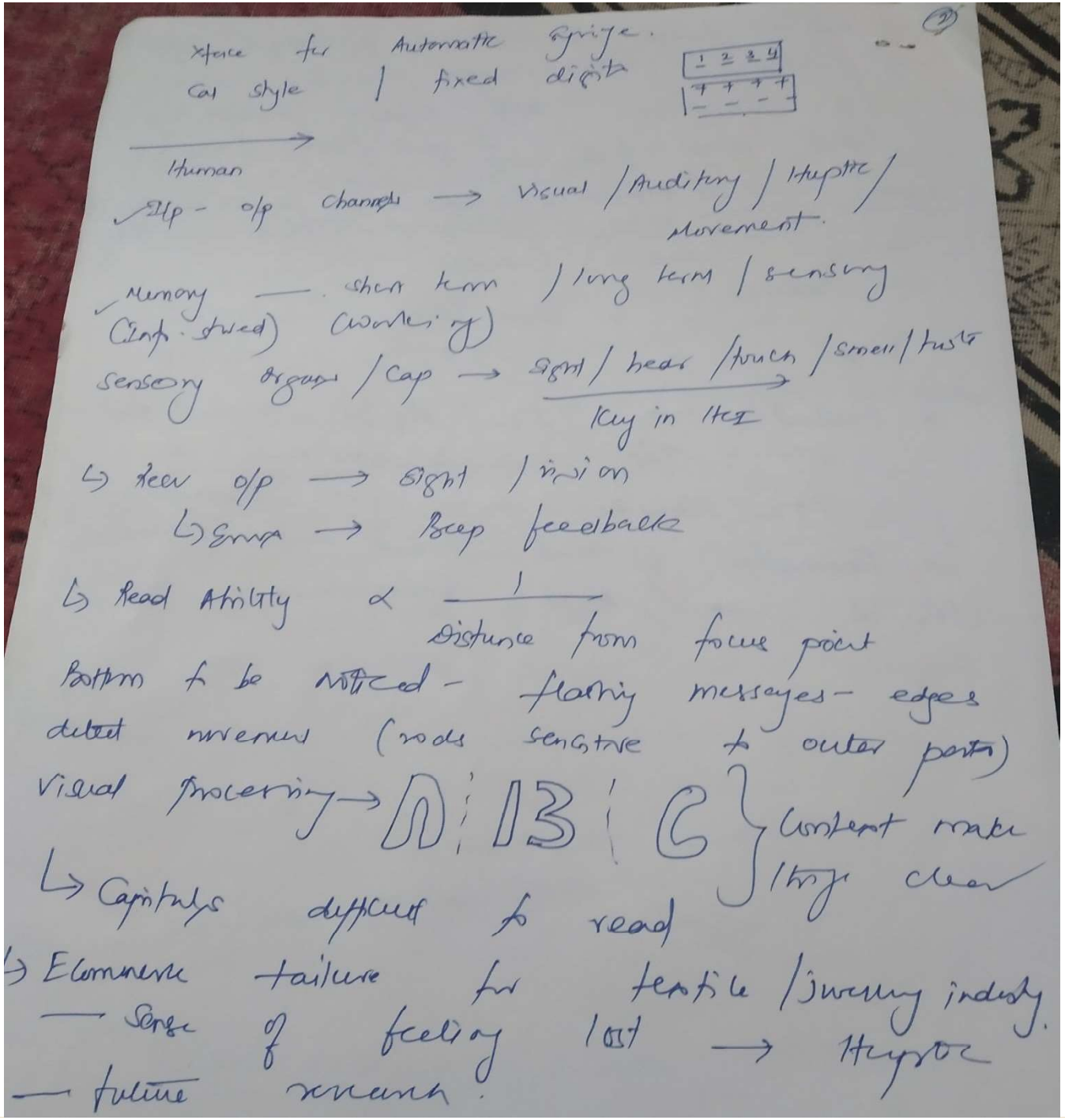
35 x 6 → (35 x 2) x 3 = 210.

* limited → 7±2 digits remember
(digit span) *Menus ?
—— UNIX commands

7±2 chunks.

↳ formation of a chunk → closure
ATM Example

closure →


Xface for Automatic gripe.
Car style | fixed digits
1 2 3 4
Human
I/p - o/p channels → Visual / Auditory / Haptic / Movement.
Memory — short term / long term / sensory
(Temp. stored) (working)
sensory organs / cap → sight / hear / touch / smell / taste
key in HCI
↳ Recv o/p → Sight / vision
↳ Error → Beep feedback
↳ Read Ability ∝ 1 / distance from focus point
Bottom to be noticed - flashy messages - edges
detect movement (rods sensitive to outer parts)
visual processing → A ; B ; C } Content make large clear
↳ Capitals difficult to read
↳ E commerce failure for textile / jewelry industry.
— Sense of feeling lost → Hyptic
— future research.