

NEUROSCIENCE OF ACCELERATED LEARNING

CLASS 10 · CLASS 12 · COLLEGE

Ed.NO. 01 — THE OPERATING MANUAL FOR YOUR MEMORY

THE Topper's *Brain*

Learn more in less time

— and remember it in the exam hall.

Minimum effort. Maximum recall.

Engineered from neuroscience — written to be applied.



AUTHORED BY

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This is not a timetable. It is the operating manual for your memory — the exact, evidence-backed protocols that turn fewer hours of study into higher marks, and turn marks you can recognise into knowledge you can retrieve under pressure.

CONTENTS

What's inside

01	The Mechanics of Memory	why rereading lies to you.	03
02	The Core Study Protocols	the four highest-ROI techniques on earth.	06
03	The Topper's Architecture	how to build the study day.	10
04	Performance Psychology	control your nerves in 5 seconds.	12
05	The 1% Margin	what separates a topper from a high scorer.	14
06	The Map	what to Use, and When	17
	About Tanuj Suthar		21

Marks are not paid for hours.

Every year, thousands of students who studied for ten hours a day are beaten by students who studied for five. The rest were not lazy. They were busy — but busy in the wrong direction. They confused the feeling of studying with the fact of learning.

Here is the truth the toppers know and the average student never discovers: the exam does not pay you for time spent. It pays you for memories you can rebuild, from scratch, alone, under a clock, while nervous.

That single sentence rewrites how you should study. This manual gives you the “Minimum Effective Dose” — the smallest amount of the right effort that produces the largest, most durable result. Every protocol inside is drawn from cognitive science and neuroscience, and every one is built to be used by a real, tired, exam-pressured 17-year-old — not by a researcher in a lab.

HOW TO USE THIS MANUAL

- Read it once, fully. Then keep Section 6 (“The Map”) open as your daily reference.
- Do not try all of it at once. Install one protocol per week. A habit kept beats a system abandoned.
- Every technique includes an “Explain it like I’m 8” line. If you can’t explain it that simply, you don’t own it yet.

Psychologist’s Note on Exams

*Let me be absolutely clear: your board exam **marks** are **NOT a measure of your intelligence, your human worth, or your ultimate success in life**. They are simply a metric of how efficiently you can retrieve specific information under highly artificial, timed conditions. The real world will almost never test you this way. But right now, exams are a game you are required to play. If you are going to step into that arena, you might as well have the absolute best tools at your disposal to win it on your own terms. This manual isn’t about worshipping marks or feeding into the anxiety; it is about giving you the cognitive tools to master the system, reclaim your free time, and remove the unnecessary suffering from the learning process. You are vastly more than a number on a page—but if you want that number to be the highest it can possibly be, this is how you engineer it.*

01

The Mechanics of Memory

Before any technique, understand the machine. Three ideas explain why most studying fails — and why a topper's works.

1 Rereading lies to you: the Illusion of Competence

When you reread your notes, each pass feels smoother. Your brain reads that smoothness — called **processing fluency** — as proof that you understand. It is not. It only proves you have seen the words before. Recognising material is a shallow brain process. Rebuilding it from memory, alone, is a deep one.

The exam never asks you to recognise. It asks you to rebuild.

This is the single most expensive mistake in exam preparation: spending hours feeling confident while building almost no real memory.

RECOGNITION

“I’ve seen this.”

Shallow · feels easy · fades fast

≠

RETRIEVAL

“I can rebuild this.”

Deep · feels hard · lasts

EXPLAIN IT LIKE I'M 8

Reading your notes again is like watching someone else ride a bike and thinking you can now ride it. You can't. You only learn by getting on and wobbling yourself.

2 Encoding vs Retrieval: the rule that changes everything

Encoding is putting information *in*. Retrieval is pulling it back *out*. Almost every student spends 95% of their time encoding (reading, highlighting, watching) and almost no time retrieving (testing themselves with the book shut).

Encoding

95%

Reading · highlighting · watching

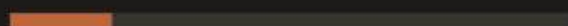


Putting information in. Necessary — but it strengthens almost nothing on its own.

Retrieval

5%

Self-testing, book shut



Pulling memory out. This is what actually builds permanent recall — and where almost no one spends time.

Here is the counter-intuitive science: **the act of pulling a memory out is what makes it stronger.** Every time you successfully retrieve something with effort, the memory is rebuilt thicker and more permanent than before.

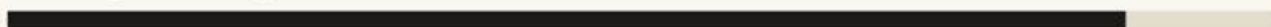
Reading strengthens nothing. Retrieving strengthens everything.

3 Why forgetting is your friend: Storage vs Retrieval Strength

Researchers Robert and Elizabeth Bjork showed that every memory has two separate dials:

Storage Strength

ALMOST NEVER DECREASES



How deeply and permanently a memory is wired in.

Retrieval Strength

RISES & FALLS FAST · LIKE SIGNAL BARS



How easily you can reach it right now.

The twist: you only grow storage strength when retrieval strength is *low* — when you’ve half-forgotten and have to fight to remember. The effort of clawing back a fading memory is the signal that tells your brain: “make this permanent.”

THE TOPPER’S MINDSET SHIFT

Forgetting is not failure. It is the doorway to deep learning. A topper deliberately lets memories fade a little, then forces them back — because that struggle (“desirable difficulty”) is what burns knowledge in permanently.

02

The Core Study Protocols

Four techniques carry almost all the weight.

*Do nothing else in this manual but these four, and you would
already beat 95% of students.*

A / Active Recall + Spaced Repetition

B / Feynman + Blank Sheet

C / Dual Coding + Load Control

They share one DNA: they force **effortful retrieval** and they exploit forgetting.

PROTOCOL A

A Active Recall & Spaced Repetition

These are the two most powerful, most tested findings in all of learning science. **Active recall** = closing the book and forcing the answer out of your own head. **Spaced repetition** = doing that retrieval at widening time gaps, timed to just before you would forget. Together they are unbeatable.

Active Recall

Close the book. Force the answer out of your own head — then check.

Spaced Repetition

Repeat that retrieval at widening gaps — right before you'd forget.

EXPLAIN IT LIKE I'M 8

Don't re-read the answer. Hide it, guess it, then check. And test yourself again right before you're about to forget — that's when your brain locks it in.

Execution follows on the next 2 pages — the self-testing page, the spacing ladder, and the algorithm for your hardest subjects.

PROTOCOL A // EXECUTION

The Self-Testing Cornell Page

Turn your notes into a testing machine, not a storage archive. Split every page into two columns:

CUE COLUMN · 30%	ANSWER COLUMN · 70%
Questions, prompts, keywords only. Nothing else.	The full explanation, derivation, or diagram.
Q. Define hydrolysis?	
Q. Why is it reversible?	
Q. One example?	
	-- cover this column to revise

- 1 First study:** fill both columns. **To revise:** cover the right column completely — read only the cue on the left.
- 2** Force the full answer out loud or in writing — from memory, with the answer hidden. Then uncover and check.
- 3** Mark each cue: **got it** / **shaky** / **blank**. Re-test only the shaky and blank ones; the ones you nailed go to a longer gap.

1 · 3 · 7 · 21

Don't revise on random days. Revise on an **expanding ladder** so each review lands just as the memory starts to fade.



The exact numbers matter less than the principle: **each gap is bigger than the last.**

The SM-2 Algorithm (Anki)

For Physics, Organic Chemistry, and Maths, a fixed ladder is too crude — some concepts are easy, some are brutal. SM-2 (the engine inside the free app **Anki**) schedules every card on its own, by difficulty. You don't need the maths — the app does it — but here is how it thinks, so you trust it.

AFTER EACH CARD, RATE YOUR RECALL 0-5

5 Perfect — instant	4 Correct, slight hesitation	3 Correct, real struggle
2 Wrong, felt familiar	1 Wrong, barely recognised	0 Total blank

THE RULE THE ALGORITHM FOLLOWS

Each card carries an **Easiness Factor (EF)**, starting at 2.5. After every review it updates:

$$EF' = EF + (0.1 - (5 - q) \times (0.08 + (5 - q) \times 0.02))$$

— with a floor of 1.3 (it never drops below). Intervals: 1st review after **1 day**, 2nd after **6 days**, then each next gap = previous gap × EF.

If you score below 3, the card **resets** and comes back tomorrow. Easy cards fly out to month-long gaps, freeing your time for what's actually hard. It is suggested that you use Apps like Anki. Free versions may be available online. If not, one can also make flashcards manually on their own and use this protocol.

PROTOCOL B

B The Feynman Technique + Blank-Sheet Retrieval

Reciting textbook jargon can hide a hollow understanding — the “illusion of explanatory depth.” The Feynman Technique destroys it by forcing you to explain a concept in plain words a child could follow. The gaps where you stumble are the exact things you don’t actually understand.

EXPLAIN IT LIKE I'M 8

If you can't explain it to a 12-year-old without big words, you don't really get it yet — you've just memorised the sounds.

EXECUTION — 5 STEPS, ~15 MINUTES PER CONCEPT

- 1 Blank-Sheet dump (5 min).** Shut everything. On a blank page, write everything you know from memory. This roughly triples retention versus rereading — and exposes blind spots instantly.
- 2 Teach a 12-year-old.** Below the dump, explain the concept in short, plain sentences. Zero jargon allowed.
- 3 Catch the stumbles.** Mark every place you got vague, used a fancy word to hide, or jumped a step. Those are your real gaps.
- 4 Re-study only the gaps.** Go back to the book — but only for the broken bits, not the whole chapter.
- 5 Add an analogy.** Finish by tying it to something everyday. If your analogy breaks, your understanding is still broken.

PROTOCOL C

C Dual Coding + Cognitive Load Control

Your working memory — the mental desk where thinking happens — holds only about **four things at once**. Waste that space and you can't learn. **Dual Coding:** the brain has two separate input channels. Feed both at once (a labelled diagram you draw yourself) and you effectively double your memory's capacity.



THE DESIGN RULES — WHAT TO ACTUALLY DO

- **Draw it yourself.** Glancing at a ready-made diagram does little. Retention comes from constructing the visual with your own hand.
- **Kill split-attention.** Put labels directly on the diagram, not in a legend. Looking back and forth burns working memory.
- **Don't read and listen the same words at once.** Identical text + narration overloads the verbal channel. Pick one.
- **Use flowcharts, not bullet lists, for processes.** The brain computes a picture of relationships far more cheaply than a wall of text.
- **Keep it clean.** One clear font, one accent colour for the critical path, no decoration. Clutter is wasted brainpower.

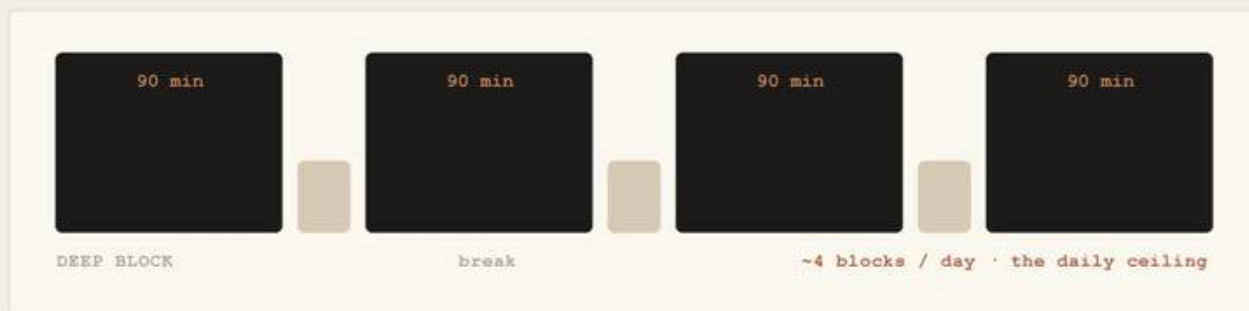
03

The Topper's Architecture

Toppers don't out-grind everyone — they structure the day around how the brain actually cycles, and mix subjects in a way that builds far stronger memory.

1 Work in 90-minute waves, not 25-minute bursts

The 25-minute Pomodoro is fine for chores, but it chops up deep work just as your brain reaches flow. Your nervous system naturally runs in roughly 90-minute waves of high focus followed by a dip — the **Basic Rest-Activity Cycle**. Ride the wave.



- Study in **~90-minute deep blocks** on one demanding task, phone in another room.
- Then take a real **15–20 minute break** — no screens, no scrolling. Walk, stretch, look out a window. The break is part of the work; it's when the brain files what you just did.
- Cap full-intensity practice at **~4 blocks a day** (about 4–6 hours of true deep work). Beyond that, error rates climb. Lighter review can sit on top — but the hard learning has a daily ceiling. Respect it.

EXPLAIN IT LIKE I'M 8

Your focus comes in waves like the sea. Surf the big wave for 90 minutes, rest while it goes back out, then catch the next one. Don't fight the ocean.

2 Interleave: mix it up to remember it better

Most students **block** — do 20 problems of the same type in a row. It feels productive and it's a trap: your brain stops choosing a method and just repeats the last one. **Interleaving** — mixing problem types within one session — feels harder, but forces your brain to first identify *what kind of problem it is* and select the right tool. That is the exact skill the exam tests.

✗ DON'T — BLOCKED



10 integration-by-parts, then 10 substitution, then 10 partial fractions.

✓ DO — INTERLEAVED



Shuffle all three types so each problem starts with "which method does this need?"

It will feel like you're learning slower. You're not — you're learning deeper. On the delayed test that counts (your board exam), **interleavers crush blockers**, especially on unfamiliar questions.

EXPLAIN IT LIKE I'M 8

Practising one shot a hundred times makes you good at that one shot. A real match mixes everything. So practise the way you'll play: all mixed up.

04

Performance Psychology

A brilliant brain leaks marks if it panics. Two skills protect your score under pressure: instant nerve control, and making practice feel like the real thing.

1 The Physiological Sigh — calm in 5 seconds

When anxiety hits, breathing goes shallow, CO₂ builds up, and your brain reads it as danger — a panic loop that shuts down the exact reasoning centres you need. The fastest known way out is a specific breath your body already does on its own when you cry or fall asleep.

THE PROTOCOL

STEP 1



Double inhale

Through the nose: one big breath in, then a second short “top-up” sniff on top to fully inflate your lungs.

STEP 2



Long, slow exhale

Through the mouth: let it all out gently and completely, like a sigh of relief.

STEP 3

×1–3

Repeat 1–3 times

That’s it. Arousal drops within seconds as the long exhale switches on your calming (parasympathetic) system.

BONUS — LOWER YOUR BASELINE NERVES

Doing this same breath continuously for 5 minutes a day (“cyclic sighing”) was shown in a **Stanford trial** to improve mood and lower resting breathing rate — more effectively than the same dose of mindfulness meditation. Five minutes. Free. Do it the night before the exam.

EXPLAIN IT LIKE I'M 8

If you feel scared, take two breaths in through your nose — a big one and a little extra sip — then let one looong breath out of your mouth. Your body knows this trick already.

2 Practise in the state you’ll perform in

Memory works best when your inside state during the exam matches your inside state during study. This is **state-dependent learning**. Most students sabotage it: they study calm, slow, comfy in bed — then perform tense, fast, and upright in a silent hall. The states don’t match, and recall stutters.

× THE MISMATCH TRAP

Study: calm, slow, lying in bed. Exam: tense, fast, upright, silent hall.



✓ THE MATCH

Train retrieval under the same mild pressure, posture, and silence you’ll face on the day.

HOW TO CLOSE THE GAP

- 1 Stress-test your practice.** Do full papers with a timer set ~15% shorter than the real exam, sitting upright at a desk, in a quiet room. Train your brain to retrieve under mild pressure so the real pressure feels familiar.
- 2 Use a sensory anchor.** Chew one specific, unusual flavour of gum (or smell a specific scent) while you do active recall — then use the exact same cue in the exam hall. The cue helps unlock the memory it was paired with.
- 3 Keep stimulants consistent.** If — and only if — you already drink tea or coffee, take the same amount at the same time before practice tests as on exam day, so your alert state matches. This manual is not telling you to start caffeine.
Sleep beats any stimulant.

05

The 1% Margin

Everything so far gets you to excellent. This section is for the gap between excellent and unbeatable. These tools are powerful but advanced — add them only after the core four are running. And read the honesty notes: I will not sell you magic.

01 / NSDR — the 20-min reset 02 / Sleep — the consolidation engine

03 / Targeted Memory Reactivation

1 NSDR — a 20-minute daytime reset

Non-Sleep Deep Rest (also called Yoga Nidra) is a guided 20–30 minute lie-down where you stay awake but drop into deep relaxation. Done right after a heavy study block, it gives the brain an “offline” window to start filing what you just learned, and it refills mental energy so your next block isn’t running on fumes.

HOW TO DO IT

01

Right after your second or third deep block, lie down somewhere quiet, eyes closed.

02

Play a free guided NSDR / Yoga Nidra audio (YouTube has many 20-minute tracks).

03

Follow the body scan and slow breathing. Don't try to sleep — just rest at the edge of it.

HONESTY NOTE

One small brain-imaging study found a single Yoga Nidra session was linked to a large rise in dopamine availability, and the practice reliably calms the nervous system. But the research base is still young and the dramatic numbers come from tiny samples. Treat NSDR as a genuinely useful recovery and focus tool — **not a replacement for night sleep**. It amplifies good sleep; it cannot rescue a sleep-deprived brain.

2 Sleep is the real consolidation engine

This is the least glamorous and most powerful item in the entire manual. The night after you study, your brain replays the day's learning during deep sleep and moves it from fragile short-term storage into permanent memory. **Cut sleep to study more, and you are deleting the very memories you stayed up to make.**

7–9
HOURS / NIGHT

Protect **7–9 hours** — non-negotiable in the final months. This is when today's studying becomes permanent.

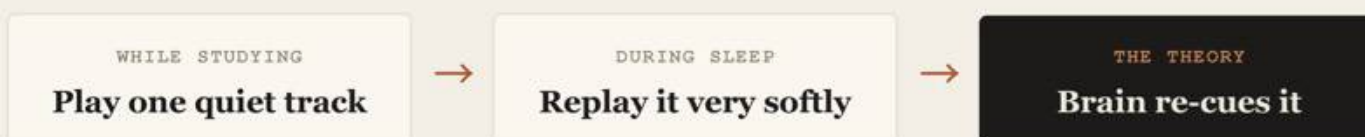
- Study your **hardest material in the few hours before sleep** so it's freshest for overnight replay — then sleep, don't scroll.
- A short **20-minute afternoon nap** also consolidates memory and resets focus. Long naps leave you groggy; keep it short.

EXPLAIN IT LIKE I'M 8

Sleep is when your brain saves the game. Skip it, and all the levels you played today are lost in the morning.

3 Targeted Memory Reactivation — the frontier experiment

In labs, scientists pair a quiet sound with specific learning, then replay that sound softly during deep sleep — and the brain preferentially strengthens that cued material. It's real, and it's fascinating. It is also **the most experimental thing in this guide.**



HONESTY NOTE — OPTIONAL, NOT REQUIRED

The at-home version (playing a faint tone during sleep) is **unproven for real exam results** and the effects in studies are modest and selective. Do not let it cost you sleep or sanity. If you're curious and your sleep is already solid, you may experiment: pick one quiet instrumental track, play it only while studying your two hardest concepts of the day, then play it very softly during the first part of sleep. **Treat it as a bonus lottery ticket — never as a core strategy.**

06

The Map — What to Use, and When

Keep this section open daily. It is the whole manual on a few screens — the reference you'll actually live in.

The whole manual, on one page

TECHNIQUE	WHEN TO USE IT	TIME COST	WHAT IT FIXES
Active Recall	Every revision, always. Replace all rereading with self-testing.	Same	The illusion of competence
Spaced Repetition (1–3–7–21 / Anki)	Daily, to schedule what to revisit.	Low	Forgetting before the exam
Feynman + Blank Sheet	Any concept that feels “fuzzy” or you can’t explain simply.	~15 min	Fake / shallow understanding
Dual Coding	Diagrams, processes, anything visual or multi-step.	Same	Working-memory overload
Interleaving	All problem-practice (Maths, Physics, Chem).	Same	Can’t pick the right method
90-min Blocks	Structuring every study day.	—	Burnout, shallow focus
Physiological Sigh	The instant anxiety spikes — study or exam hall.	5 sec	Panic, blank-outs
State-Dependent Practice	Full mock papers in the final weeks.	—	Exam-hall nerves
NSDR + Sleep	Daily recovery; sleep every night.	20 min / nightly	Poor memory consolidation

If you only ever consult one page after reading this manual — make it this one.

A Topper's Day — one workable template

Adapt the clock to your life — keep the sequence: hardest work when fresh, testing later, recovery built in.

Block 1 90 min	Analytical core Hardest new Maths / Physics derivations. Interleave problem types. Draw dual-coded diagrams.
Break 15-20 min	No screens. Walk, stretch, water, a few physiological sighs.
Block 2 90 min	Deep understanding Feynman the toughest concepts. Build tomorrow's Cornell cue questions.
NSDR 20-30 min	Reset. Guided Yoga Nidra to consolidate the morning and refill focus.
Block 3 90 min	Testing Active-recall the cards due today (1-3-7-21). Run a timed mini-paper. Use your sensory anchor.
Long break lunch	Real food, real rest. Protein + healthy fat. Low cognitive effort.
Block 4 90 min	Consolidate Tidy notes, make tomorrow's cards, close any gaps you found today.
Night 7-9 hrs	Sleep 7-9 hrs. Hardest material reviewed just before bed. This is when it becomes permanent.

Start tomorrow: your first 7 days

Don't install everything at once. This is the on-ramp:

DAY

1–2

Ban rereading. Convert one chapter into Cornell cue-questions and self-test it.

DAY

3–4

Add the 1–3–7–21 ladder (or set up Anki). Feynman your single weakest concept on a blank sheet.

DAY

5–6

Switch problem practice to interleaving. Run your day in 90-minute blocks.

DAY

7

Do one timed, upright, pressure mock. Practise the physiological sigh. Protect your sleep.



WHO WROTE THIS, AND WHY

Tanuj Suthar

Psychologist · Indore

I'm a **psychologist (BSc, MSc.)**, and **1st Ranker** in my university (BSc. Psychology Hons. from Christ Deemed to be University, Bangalore). I work where the mind meets performance — how real people think, focus, fall apart under pressure, and rebuild. I made this guide for a simple reason: the science that produces top 0.1% performers is locked inside journals and Ivy League lecture halls, written in language no exhausted 17-year-old can use. That's not fair. So I translated it.

Everything in these pages is real cognitive science — active recall, spaced repetition, desirable difficulty, dual coding, the work of **Bjork**, **Sweller**, **Paivio**, and the sleep and stress researchers — rewritten so a child could follow it and a topper could win with it. Where the evidence is strong, I told you to trust it. Where it's thin, I told you the truth instead of selling you hope. **That honesty is the whole point.**

MY ONE BELIEF ABOUT YOU

You are not “bad at studying.” You were handed bad methods. Change the method and the same brain produces a different result. I've watched it happen too many times to doubt it.

If this manual helped you — if even one protocol changed how a week of studying felt — do two things.

Use it relentlessly until the exams. And pass it to the friend who's working twice as hard for half the result. They need it more than they know.

MOST IMPORTANT:

*Saying it again, so you know I mean it: your board exam **marks** are **not a measure of your intelligence, your human worth, or your ultimate success in life.** They are simply a metric of how efficiently you can retrieve specific information under highly artificial, timed conditions. The real world will almost never test you this way. But right now, exams are a game you are required to play. If you are going to step into that arena, you might as well have the absolute best tools at your disposal to win it on your own terms. This manual isn't about worshipping marks or feeding into the anxiety; it is about giving you the cognitive tools to master the system, reclaim your free time, and remove the unnecessary suffering from the learning process. You are vastly more than a number on a page—but if you want that number to be the highest it can possibly be, this is how you engineer it.*

— Tanuj Suthar

Psychologist · Indore · Find me: tanuj.suthar.com

STOP HIGHLIGHTING. START ENCODING.

"What if 8-hour study days are actually destroying your memory?"

WHAT'S INSIDE

- **The Spaced Repetition Algorithm**
Never forget a formula again.
- **Active Recall Frameworks**
Bypass the "Illusion of Competence."
- **State Regulation Protocols**
Neutralize exam anxiety before you enter the hall.
- **The Topper's Architecture**
Build a study day that compounds — not drains.

ABOUT THE AUTHOR



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Ex-CEO (HealCompass India Pvt. Ltd.; Psychophilics.com)
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students can actually use under pressure.

THE ONE LINE THAT HOLDS THE WHOLE MANUAL

Make it harder to
remember *now*, so it's
impossible to forget *later*.

Test Space Mix Explain Sleep



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