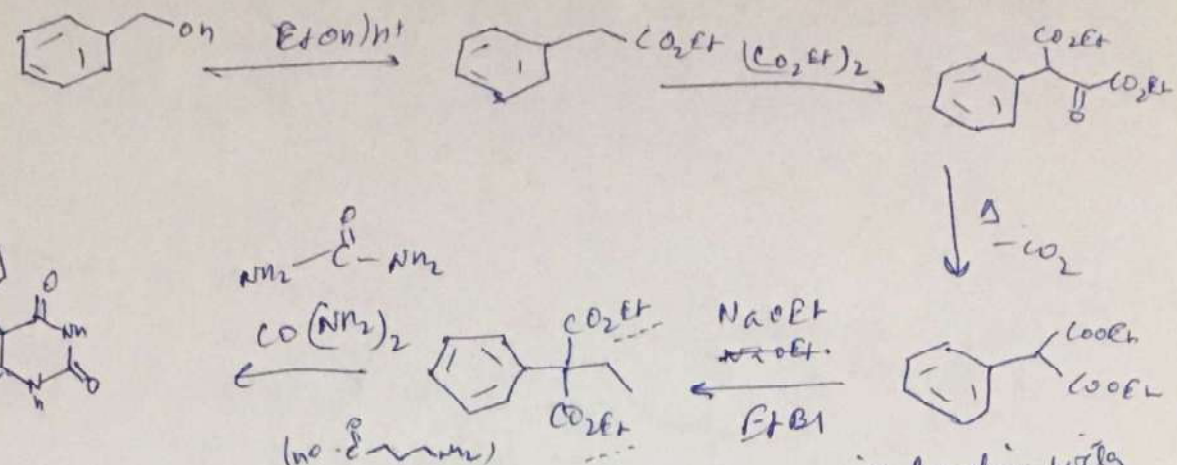
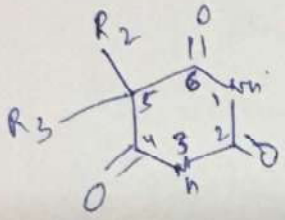
Phenobarbiturate → Synthesis



* Binds to GABA receptors → enhance its binding with Cl⁻ channels (receptors) → ↑ Cl⁻ flow → create −ve potential → delay signal clearance potential.
* inhibitory neurotransmitters

SAR



- C_5 → phenyl → optimum activity was observed.
  - quaternary C ↑ activity
  - but diphenyl has less activity than phenobarbiturates
- N_1 & N_3 substitution in some cases increases activity
- more than 6 ~~member~~ C ring → activity ↓.
- introduction of polar group in side chain → destroys activity

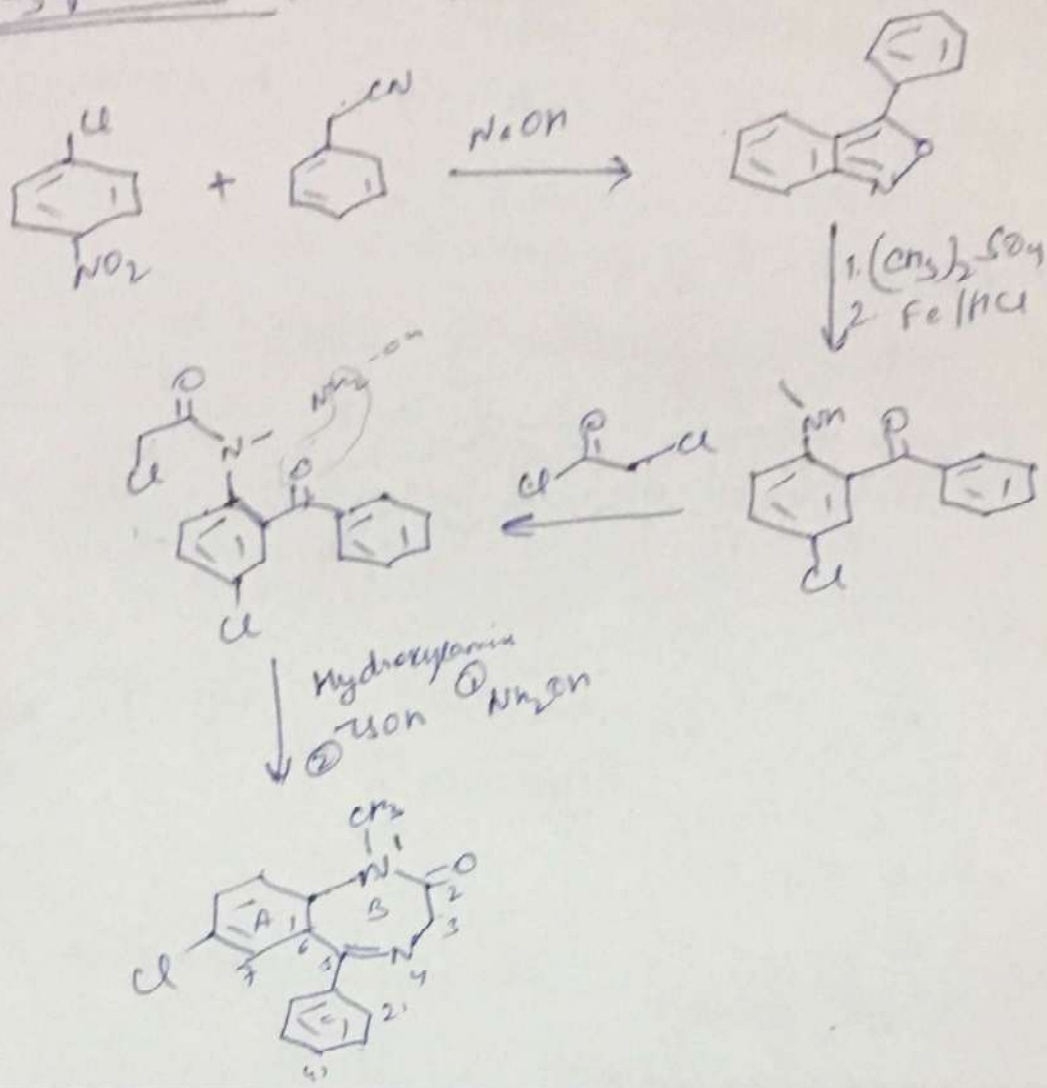
GABA binds to GABA A receptor → ↑ Cl⁻ flow.

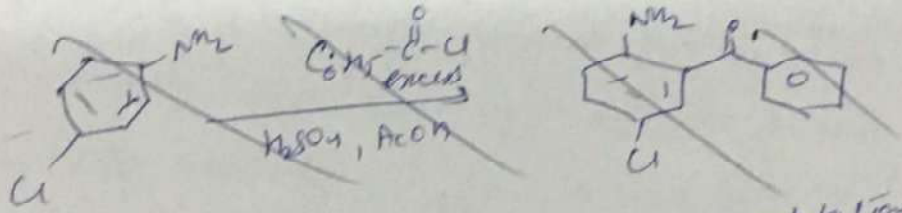
Barbiturate binds to AMPA receptor (for glutamate)
↳ ↑ Transmembrane potential by ↓ ↓ Cl⁻ flow)

Barbiturates block glutamate → increases duration of receptor response to GABA & extend the depressed condition of cell

Barbiturates ~~binds~~ in insomnia, anxiety,

Diazepam (Valium)





Uses → ~~Inhibitor of~~ ~~GABA~~ Increases inhibitory effect of GABA

Reduces anxiety

⇒ Safer than Barbiturates in action & more effective

⇒ Artificially Produces sleep.

SAR

(A) 7 ⇒ $-NO_2$, Cl^-, F, CF_3
$-CH_3$, OCH_3

(B) 1. ⇒ $-CH_3$
$-$ tert butyl

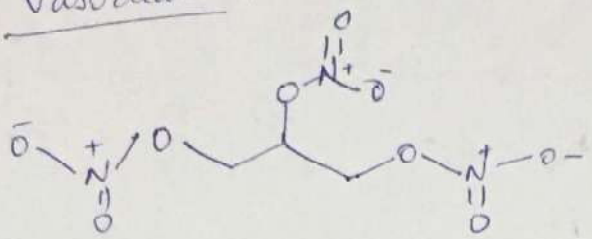
(C) 2' Cl. F
4' . any

activity ↑
" ↓
" ↑
inactive

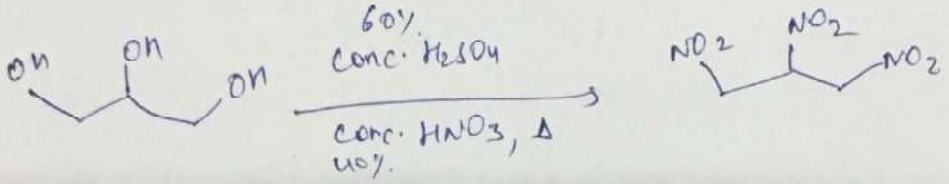
High
low.

Cardiovascular agent 1. Glyceryl Nitrate (GTN)

- Used for medications in heart failure, heart attack, chest pain (angina)
- Placed below tongue or applied to the skin.
- It is a Vasodialator → (Dialates blood vessels to allow flow of blood)



trinitro glycerine.



SAR

NO activates (NO is a neurotransmitter)

- Nitrate induces hypotension
- Nitrate prevent any coronary vasospam produced by β blockers.
- Nitrate prevent increase in left ventricular filling pressure or Preload resulting from the negative inotropic effect produced by β blocker.

Angina

↓coronary blood flow → Angina ← ↑O_2 consumed

O_2 demand > O_2 supply.

Mode of Action

Nitrate → NO

NO → Guanylyl cyclase

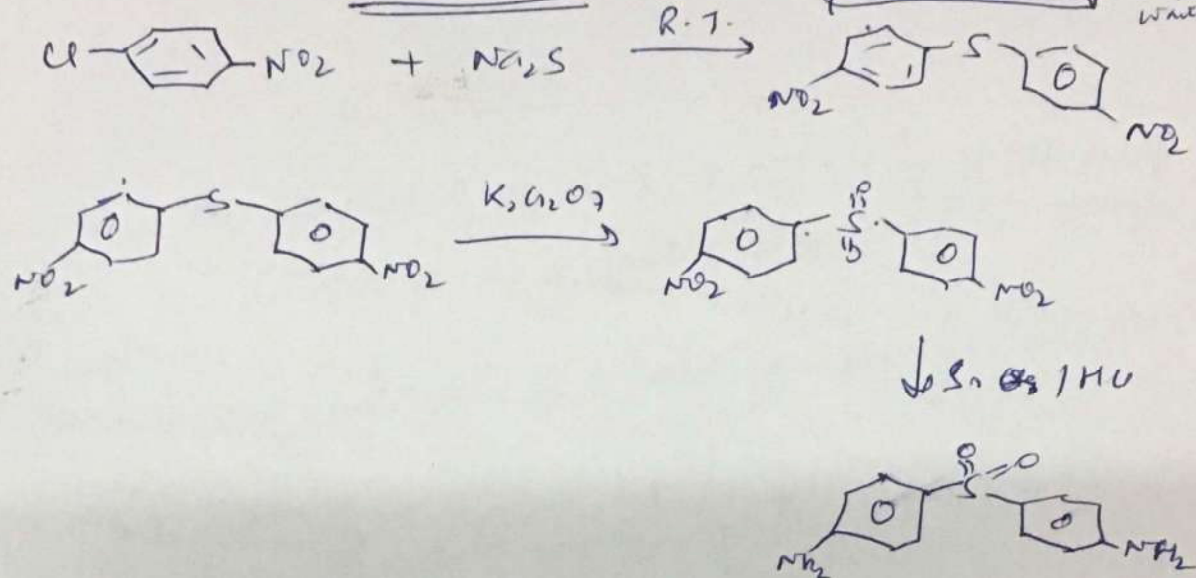
Guanylyl cyclase → Adenylyl cyclase

Adenylyl cyclase: GTP → cGMP

cGMP → GMP

cGMP
↓
Myosin LC → Myosin LCPO4 → Myosin LC
Myosin LCPO4 ↓ Contraction
Myosin LC ↓ Relaxation

Dapsone Antibiotic Anti leprosy Skin white

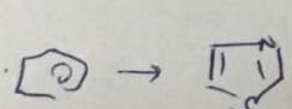


Diaminophenyl sulphone.

NH_2 → NO_2, OH → activity ↓

both NH_2 → " " X active

NH_2 → C(=O)... prodrug formed

 → ↓ activity

Dihydropteroic synthase ← Dapsone
↓
Dihydropteroic acid
↓
tetrahydro...
↓
Thymine
Purine
↓
DNA.

Side effects ⇒ Hypermelanosis.
Dermatitis
Headache

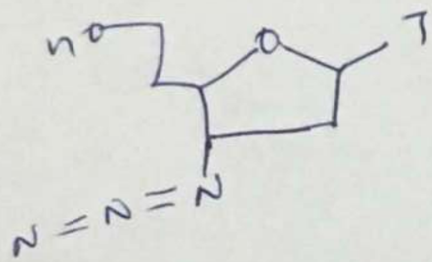
Uses → leprosy acne.

Anti HIV :- AZT

Zidovudine Azidothymidine antiretroviral

Anti retro virus. (Nucleoside R T inhibitor)

reverse transcriptase

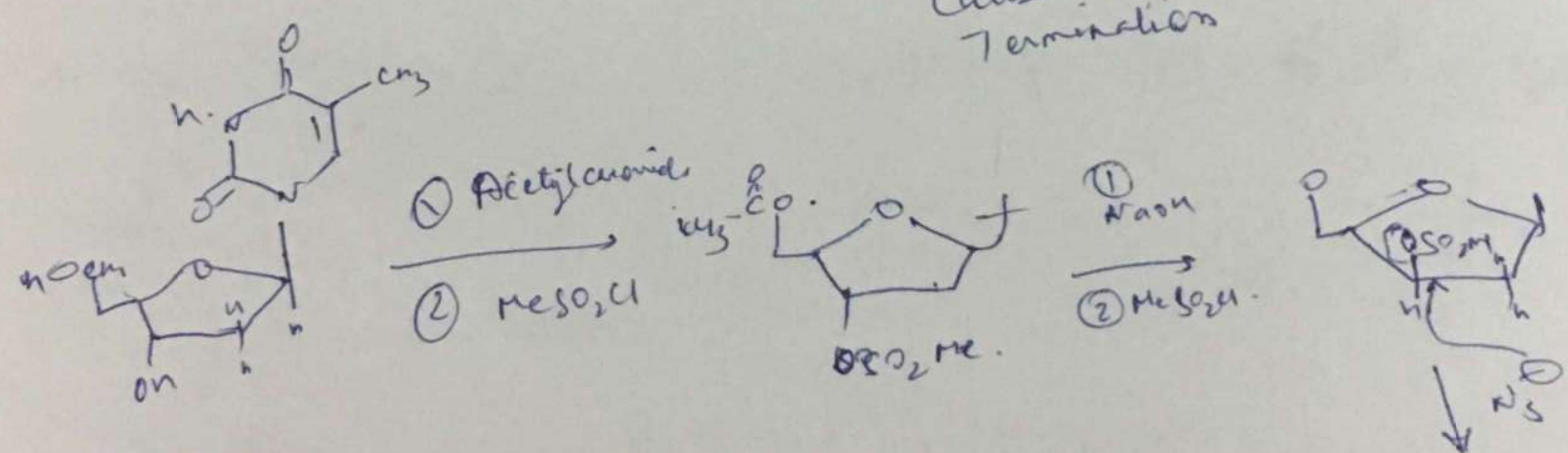


RNA (viral) —reverse transcription→ DNA (viral)

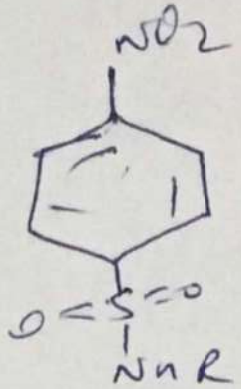
↓

CD4 chromosome

- Causes chain Termination



~~bore~~.



SAR of Sulphonamide :-

1. Para amino group must be unsubstituted (only except CH_3)
2. Aromatic ring & Sulphonamide group both are required & must directly attached to the ring.
3. Aromatic ring should be Para ~~or~~ substituted only.
4. Sulphonamid N should be ~~be~~ 1° or 2°
5. R is the only possible site that can be varied.