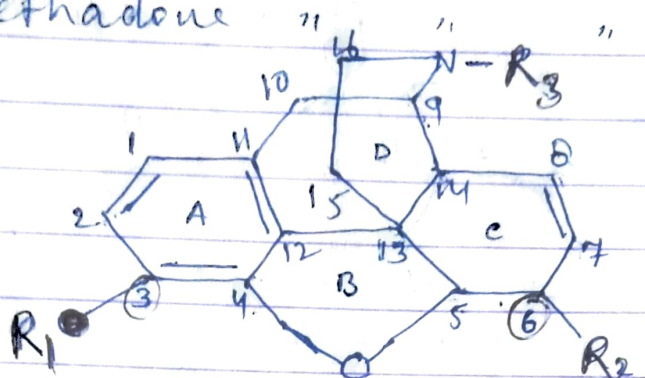


Opioid Analgesic

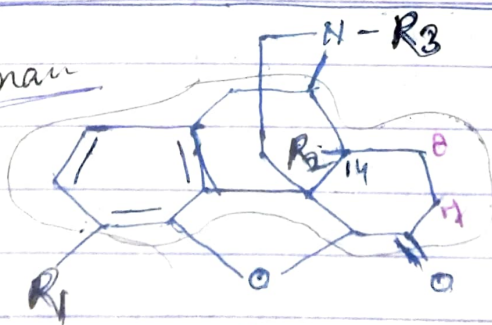
- ① Morphine and its derivative
- ② Meperidine and its derivative
- ③ Methadone



✓ Normorphine $\frac{R_3}{H}$
($3^{\circ}N \rightarrow 2^{\circ}N$)

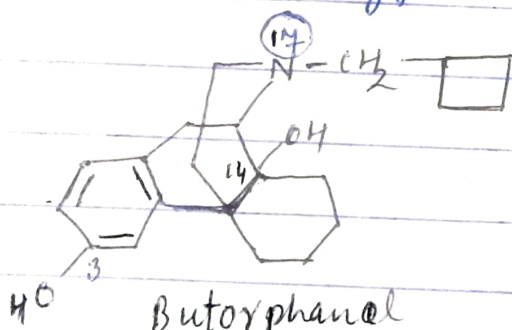
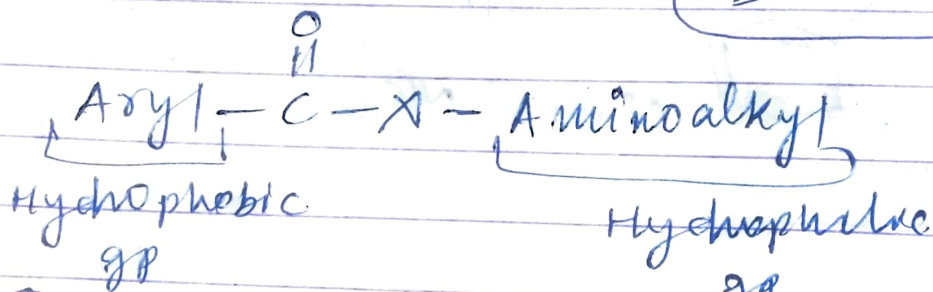
	R_1	R_2	R_3
Morphine	phenatic (OH)	Alcoholic (OH)	CH_3
codeine	$-OCH_3$	OH	CH_3
Thebaine	$-OCH_3$	$-OCH_3$	CH_3
Heroin	$CH_3-C(=O)-O-$	$CH_3-C(=O)-O-$	CH_3
Dihydrocodeine	$-OCH_3$	OH	CH_3
→ Nalorphine	$-OH$	OH	$\checkmark -CH_2-CH=CH_2$
⑤ 7- θ Double bond saturation		6-OH $\Rightarrow$ 6=O	Allyl

morphinan

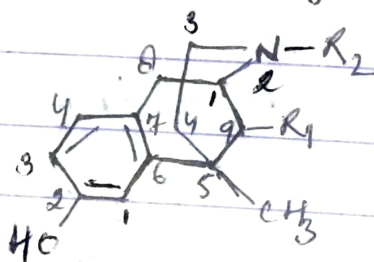


	R_1	R_2	R_3
Hydromorphone	OH	H	CH_3
oxymorphone	OH	OH	CH_3
hydrocodone	OCH_3	H	CH_3
oxycodone	OCH_3	OH	CH_3
Naloxone	OH	OH	$CH_2-CH=CH_2$
Naltrexone	OH	OH	$-CH_2-$ cyclopropyl methyl

Dextromethorphan - ③ methoxy. ⑭ methyl
 Codeine - epoxy
SAR

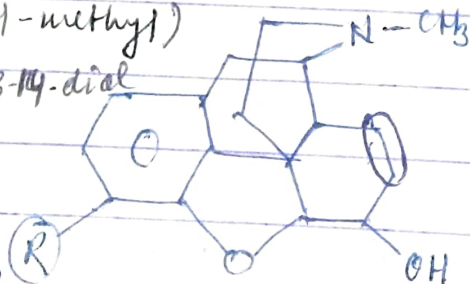


LeVallorphan - 14-allyl-morphinan-3-ol



N-allyl
normorphine

14-(cyclobutyl-methyl)
 morphinan-3-ol-dial



only double
 bond saturation

Dihydromorphine - OH

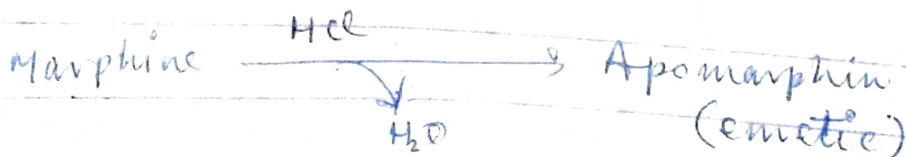
Dihydrocodeine - OCH₃
 (Paracodein)

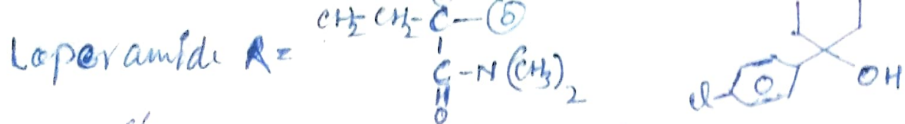
Pentazocin - R₁ = CH₃
 R₂ = CH₂CH₂C(CH₃)₂

Di-hydro
morphine

Di-hydro hydroxy
morphine

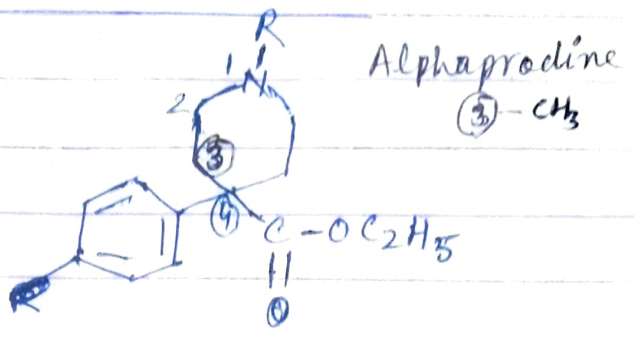
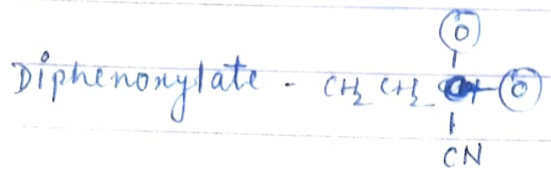
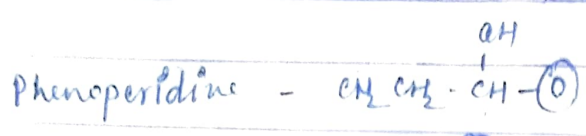
(Numorphan)





4-phenyl piperidine derivative

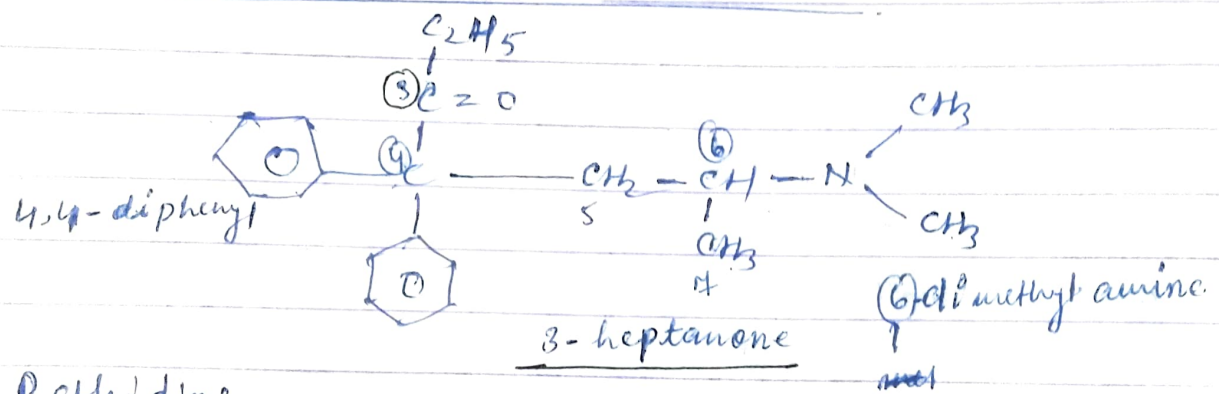
② Meperidine and its derivative



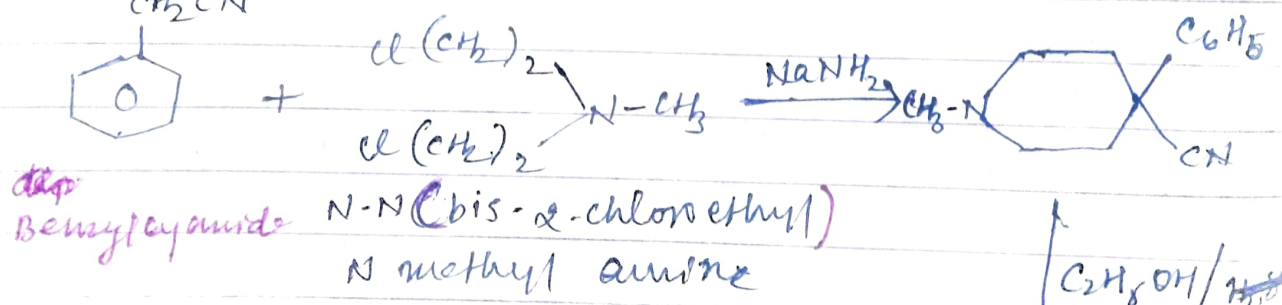
Meperidine - R = CH_3
(Pethidine)

Anileridine - R = $-\text{CH}_2\text{CH}_2-\text{C}_6\text{H}_4-\text{NH}_2$

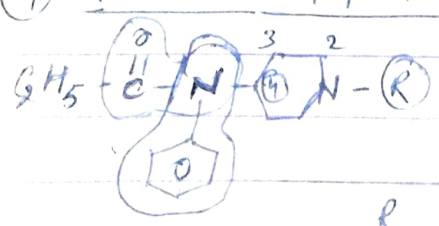
③ Methadone and its derivative



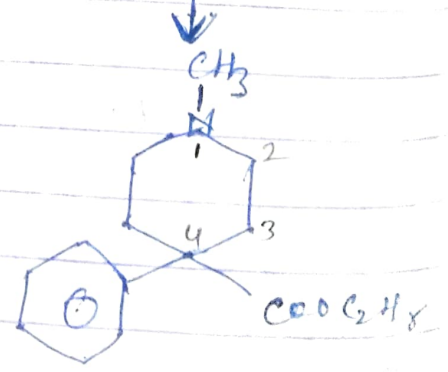
Pethidine
 CH_2CN



④ 4-Anilino-piperidine derivative

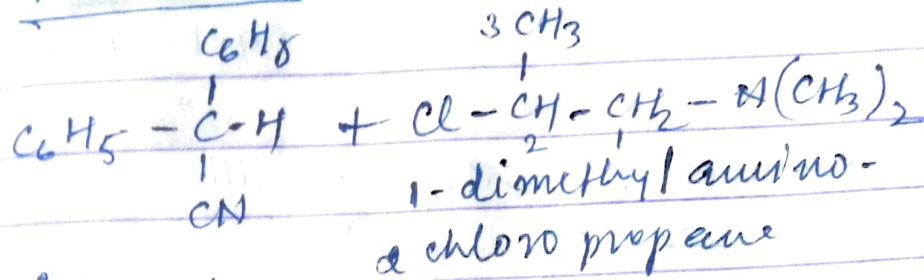


Fentanyl - $\text{CH}_2\text{CH}_2-\text{C}_6\text{H}_4$



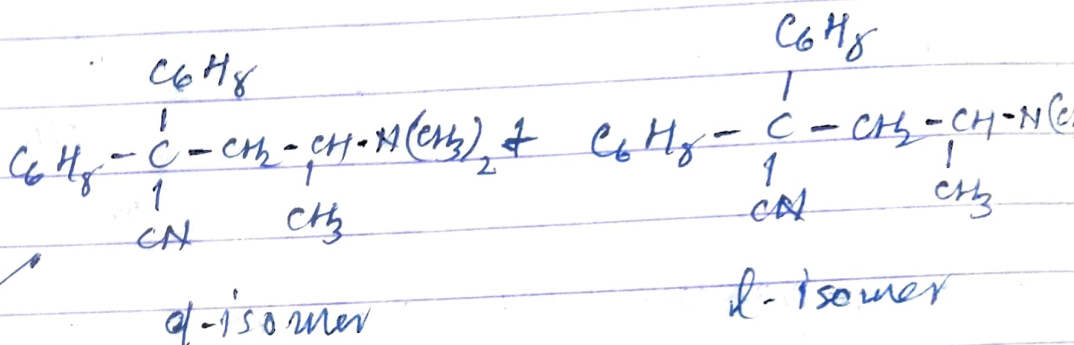
1-methyl, 4-phenyl, 4-ethyl ester, piperidine

Methadone

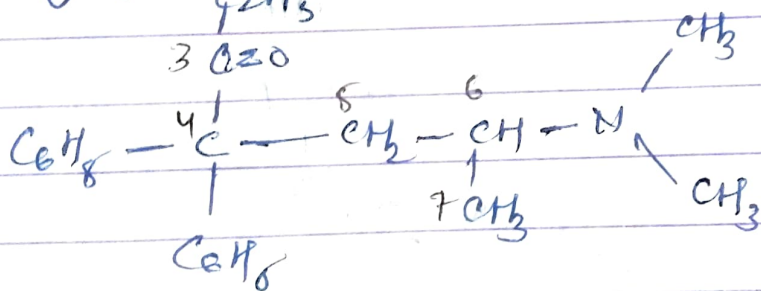


Diphenyl acetonitrile

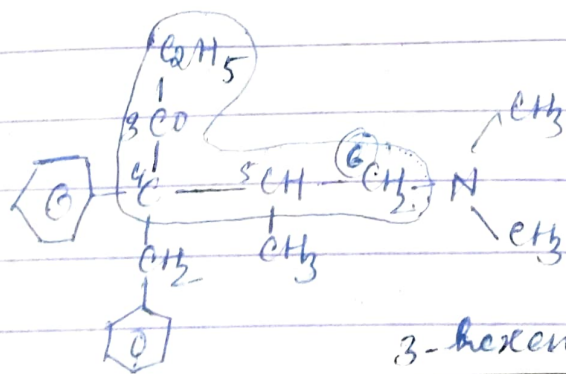
NaNH_2



1. $\text{C}_2\text{H}_5\text{MgBr}$
2. H_2O
Resolution with tartaric acid



6-(Dimethylamino)-4,4-diphenyl-3-heptone



6-dimethylamino

3-hexenone

Propoxyphenone (Methadone derivative)