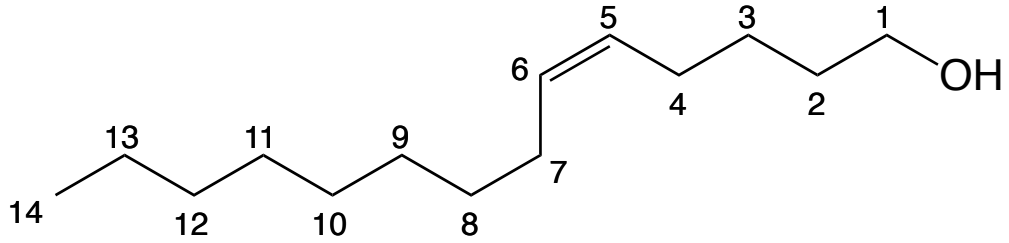
Alcohols

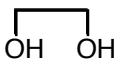


(Z)-5-tetradecen-1-ol
male mouse sex hormone

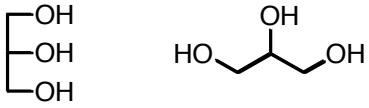
Polyols:

Diol: 2 OH groups
Triol: 3 OH
Tetraol: 4 OH, etc.

Polyols from nature:



Ethylene glycol (antifreezer)
1,2-dihydroxyethane
ethane-1,2-diol

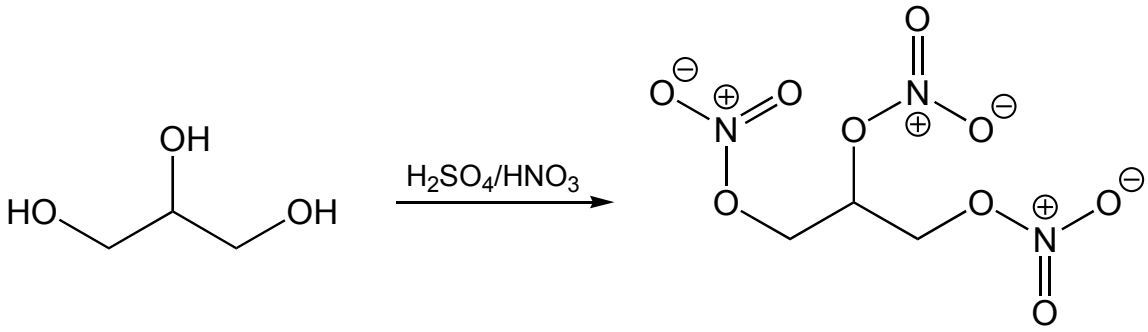


glycerol
glycerine
1,2,3-trihydroxypropane
12,3-propanetriol

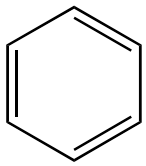
Explosives from glycerine:

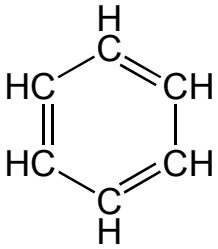
Nitroglycerine

- When mixed with 99% diatomaceous earth → dynamite. Invented by Alfred Nobel.

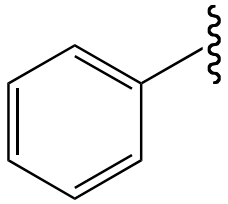


Aromatic alcohols

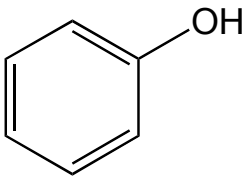




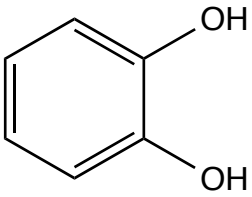
Benzene C_6H_6



Phenyl group
ϕ C_6H_5-

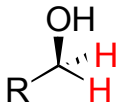


Phenol
Carbolic acid
C_6H_5OH

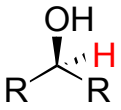


catechol

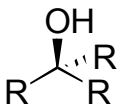
Types of alcohols



1^O Alcohol



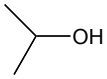
2^O Alcohol



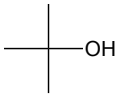
3^O Alcohol

Note the difference in primary, secondary and tertiary alcohols (where R is not a hydrogen):

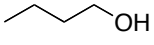
Examples:



2-Propanol
Secondary alcohol

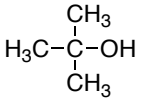


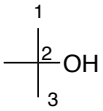
t-Butyl alcohol
Tertiary alcohol



1-butanol
butan-1-ol
n-butanol

2-butanol

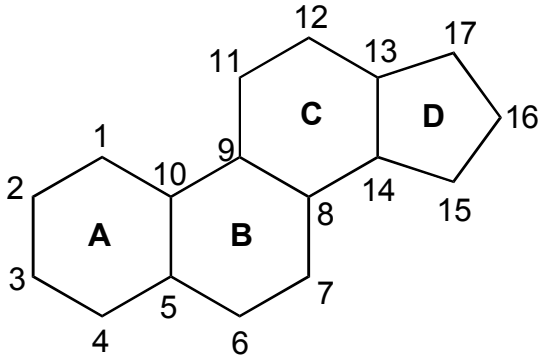




tert-butyl alcohol
2-methyl-2-propanol
2-methyl propan-2-ol

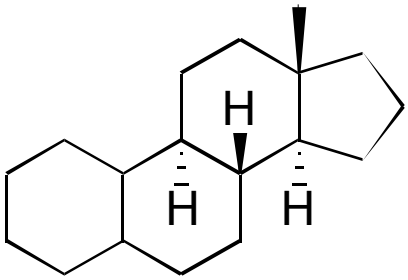
Steroid Nomenclature

Numbering carbons on steroids:

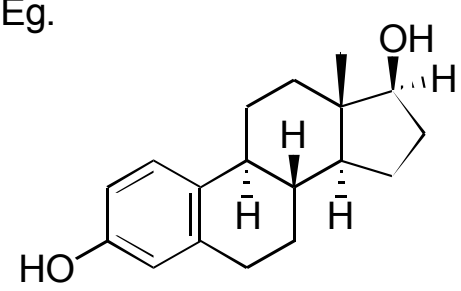


Note: Groups above the main structure are assigned β, while those below are α.

The Estrane Skeleton:

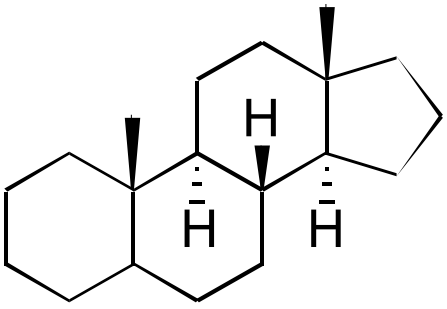


Eg.

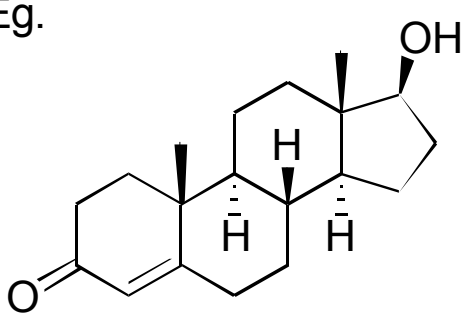


Estradiol:
Estra-1,3,5 trien-3,17β diol

The Androstane Skeleton:



Eg.

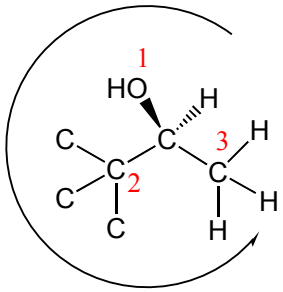


Testosterone

Exam like questions

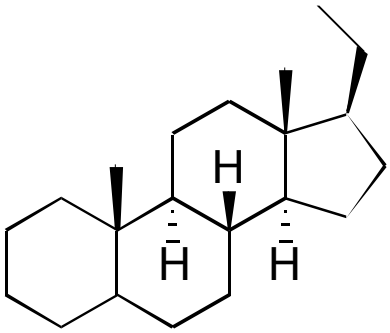
Looking at the testosterone structure identify:

1) Degrees of unsaturation? Answer: 6
2) Number of stereocenters? Answer: 6
3) Functional groups? Answer: Ketone, alkene and alcohol.
4) Define the stereochemistry of the carbon bearing the hydroxyl group (alcohol)

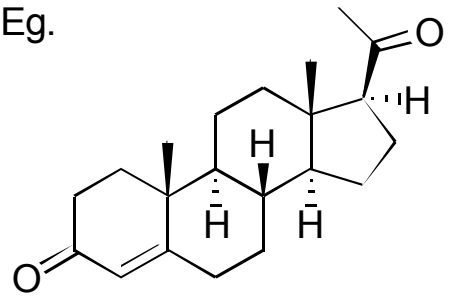


S

The Pregnane Skeleton:

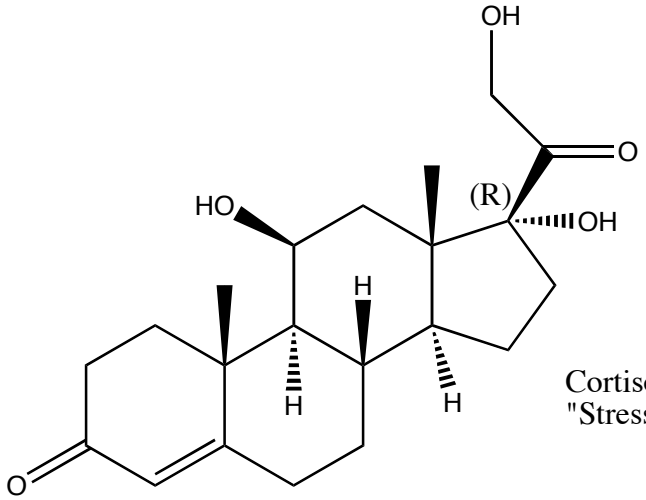


Eg.



Progesterone

An Andrenocorticoid: Cortisol



Cortisol
"Stress hormone"