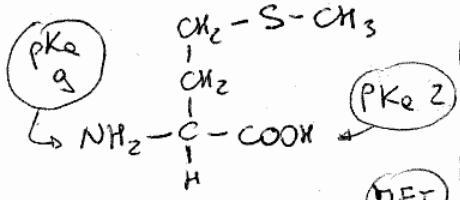
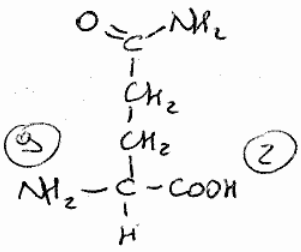
COMPITO CHIMICA ORGANICA 5i 15-1-2014

1) Nomi, strutture, pKa di: MET GLN TYR THR LYS



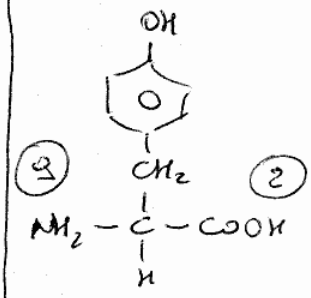
L-METIONINA

Acido (2S)-2-ammino 4-(metiltio)butanoico



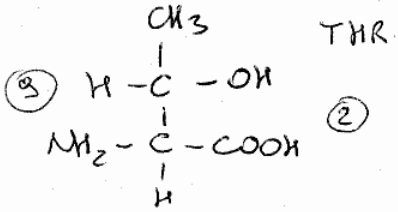
L-GLUTAMMINA

Acido (2S)-2,5-diammino 5-oxopentanoico



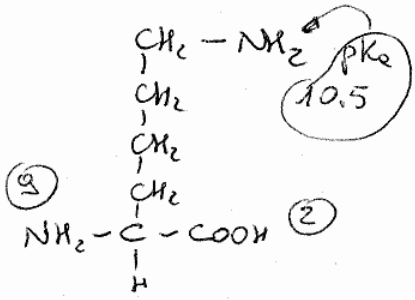
L-TIROSINA

Acido (2S)-2-ammino 3-(4-idrossifenil)-propanoico



L-TREONINA

Acido (2S,3R)-2-ammino 3-idrossibutanoico

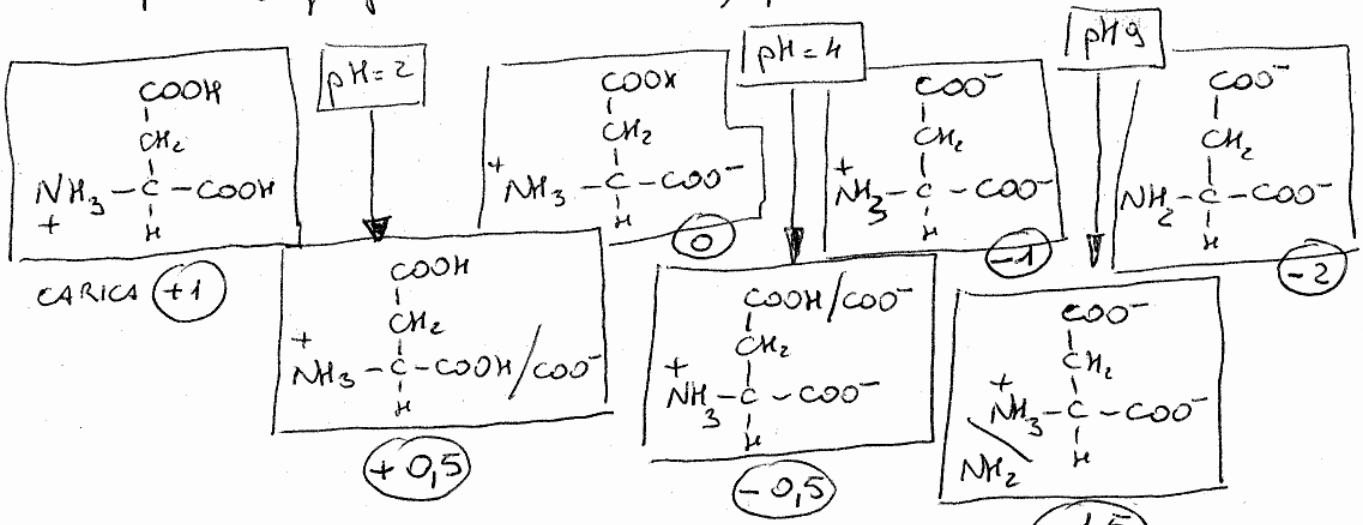


L-LISINA

Acido (2S)-2,6-diammino esanoico

2) Scrivi le varie forme acido-base di ASP ai diversi pH

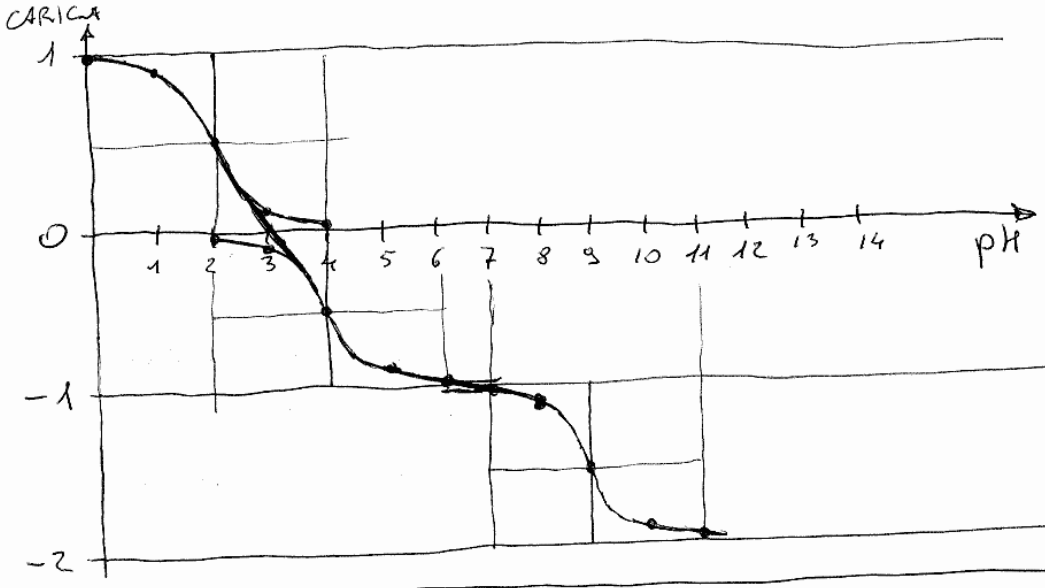
Disegna il grafico carica netta / pH



$HA \longrightarrow H^+ + A^-$ $\quad K_a = \frac{H^+ A^-}{HA}$ $\quad H^+ = K_a \frac{HA}{A^-}$ $\quad \boxed{pH = pK_a - \log \frac{HA}{A^-}}$

$pK_a - pH = \log \frac{HA}{A^-}$ $\quad pK_a = 2$

$pH = 0$	$pK_a - pH = 2 - 0 = 2$	$\log \frac{HA}{A^-} = 2$	$\frac{HA}{A^-} = 10^2$	$HA = 100\, A^-$	$HA \simeq 99\%$
$pH = 1$	$pK_a - pH = 2 - 1 = 1$	$\log \frac{HA}{A^-} = 1$	$\frac{HA}{A^-} = 10^1$	$HA = 10\, A^-$	$HA \simeq 90\%$
$pH = 2$	$pK_a - pH = 2 - 2 = 0$	$\log \frac{HA}{A^-} = 0$	$\frac{HA}{A^-} = 10^0$	$HA = A^-$	$HA = 50\%$
$pH\ 3$	$pK_a - pH = 2 - 3 = -1$	$\log \frac{HA}{A^-} = -1$	$\frac{HA}{A^-} = 10^{-1}$	$HA = \frac{1}{10} A^-$	$HA \simeq 10\%$
$pH\ 4$	$pK_a - pH = 2 - 4 = -2$	$\log \frac{HA}{A^-} = -2$	$\frac{HA}{A^-} = 10^{-2}$	$HA = \frac{1}{100} A^-$	$HA \simeq 1\%$

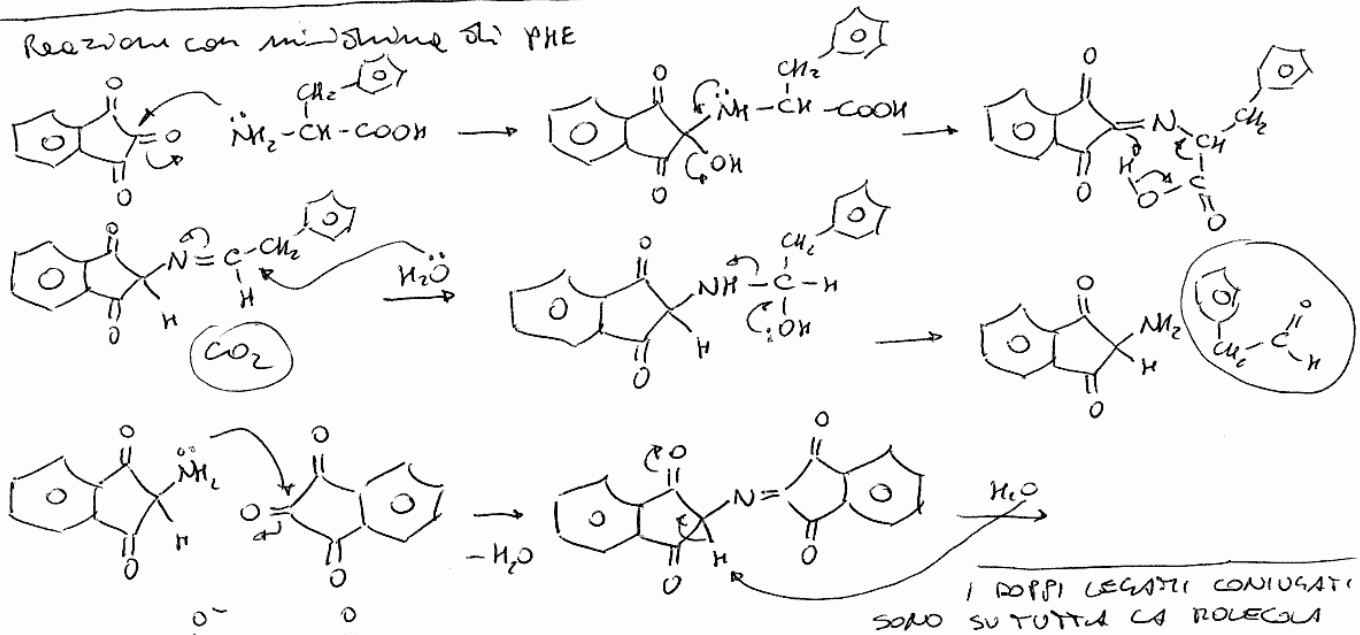


PUNTO ISOELETTRICO

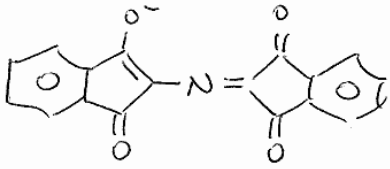
$pI = \frac{2+4}{2} = 3$

a pH = 3 la molecola è mediamente neutra

3) Reazione con ninidrina di PHE



$-H_2O$ $\quad +H_2O$



COMPLESSO COLORATO $\lambda = 570\ nm$

I DOPPI LEGAMI CONIUGATI SONO SU TUTTA LA MOLECOLA ORBITALI π CONIUGATI: