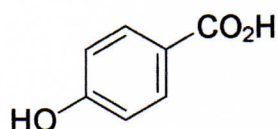


## 3a LISTA DE EXERCÍCIOS

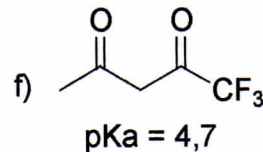
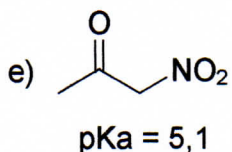
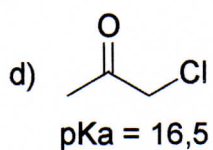
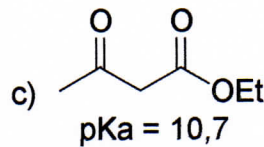
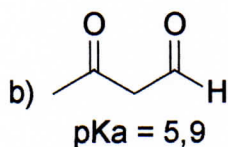
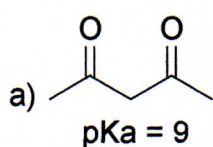
1. Quais as espécies presentes se dissolvermos o ácido *p*-hidróxi-benzóico em:

- H<sub>2</sub>O neutra,
- álcali aquoso de pH=12, ou
- uma solução concentrada de ácido clorídrico pH=0.

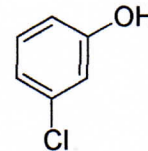
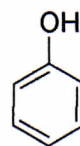
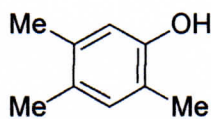
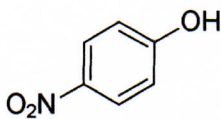
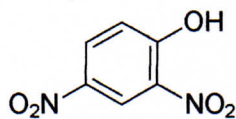


ácido *p*-hidróxi-benzóico

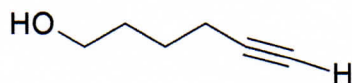
2. Explique as variações de pKa para os seguintes ácidos de carbono:



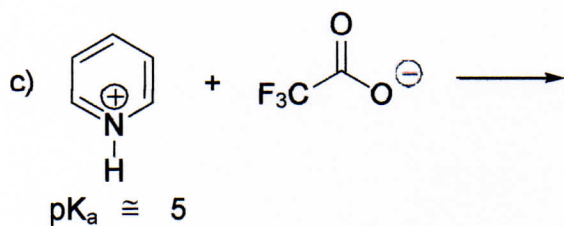
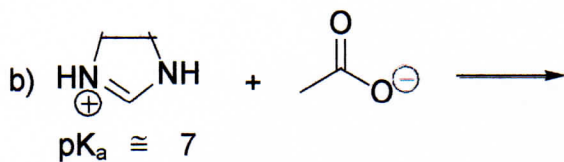
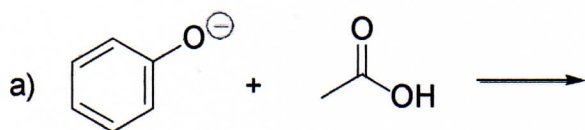
3. Os fenóis abaixo tem os seguintes valores aproximados de pKa 4, 7, 9, 10 e 11. Atribua cada valor de pKa a cada um dos fenóis e explique seu raciocínio:



4. Que espécies se formarão ao se tratar o álcool acetilênico abaixo com (i) um equivalente de  $\text{NaNH}_2$  e (ii) dois equivalentes de  $\text{NaNH}_2$  em amônia líquida.



5. Sugira as espécies que serão formadas para cada uma das combinações abaixo. Use valores de  $\text{pK}_a$  no seu raciocínio.

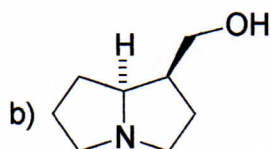
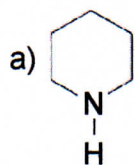


**Observação:** O  $\text{pK}_a$  do ácido trifluoroacético é próximo de zero.

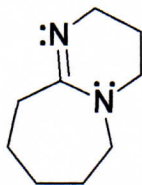
6. Para as moléculas abaixo:

- a) Quais seriam os grupos passíveis de protonação?  
 b) Quais seriam os grupos passíveis de desprotonação?

Para cada caso sugira o ácido ou a base apropriados.

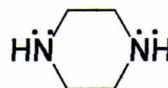


7. Explique porque o DBU é mais básico que uma piperazina. O DBU é frequentemente utilizado como base em reações orgânicas.

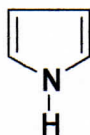


DBU

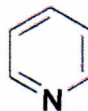
(1,8-diazabicyclo[5.4.0]undeceno-7)



8. Explique porque o pirrol é menos básico do que a piridina.



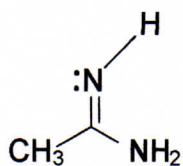
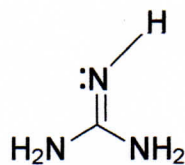
pirrol

 $pK_{aH} = -4$ 

piridina

 $pK_{aH} = 5,2$ 

9. Justifique os valores de  $pK_{aH}$  para os seguintes compostos e escolha qual das bases é mais forte.

 $pK_{aH} = 12,4$ 

guanidina

 $pK_{aH} = 13,6$