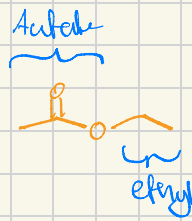


## Aufgabe 1)

a) Acetic acid



b) ethyl acetate

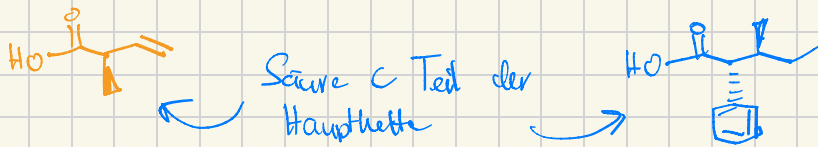


DB

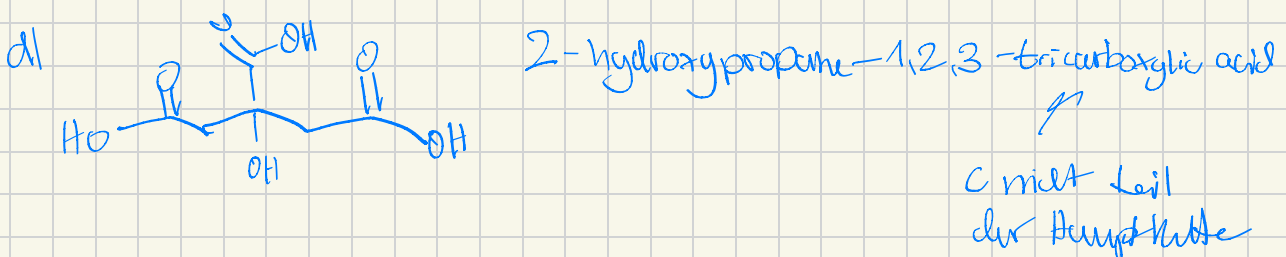
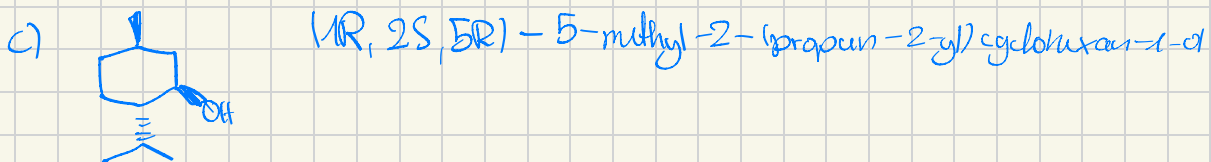
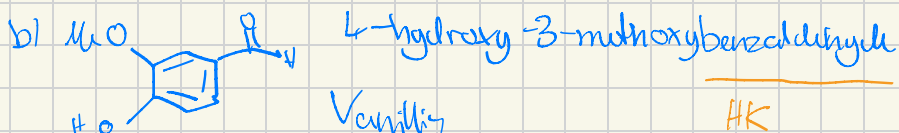
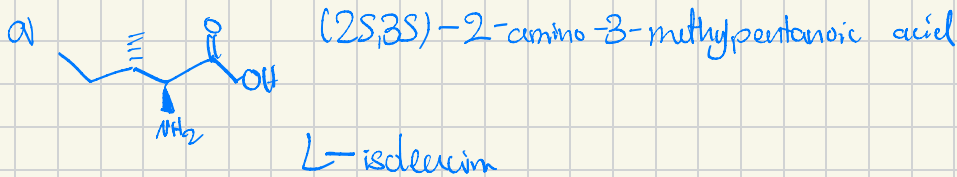


c) (R)-2-methylbut-3-enoic acid

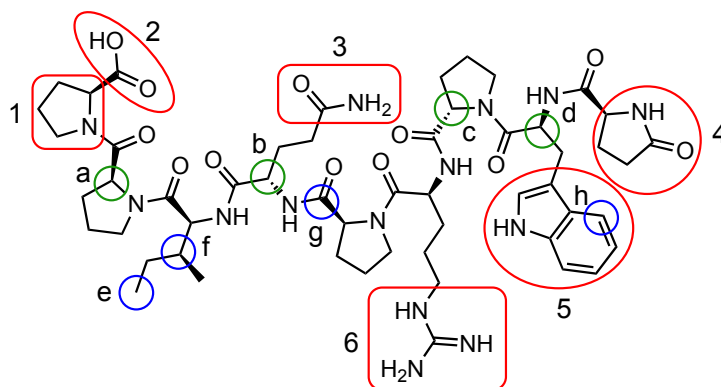
e) (2R,3S)-3-methyl-2-pentenoic acid



## 2)



3. **Teprotide** is a nonapeptide which has been isolated from the venom of *Bothrops jararaca*, a highly venomous snake species living in South America. It is an angiotensin converting enzyme inhibitor (ACE inhibitor), which inhibits the conversion of angiotensin I to angiotensin II. Drugs developed from this peptide are used for the treatment of hypertension and some types of congestive heart failure.  
Name the functional groups (red), configuration (green) and hybridization (blue).

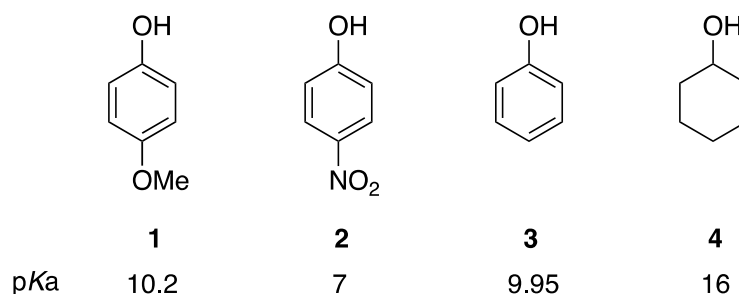


Teprotide

|               |                    |                    |                    |                    |
|---------------|--------------------|--------------------|--------------------|--------------------|
| Name of FG    | 1) Pyrrolidine     | 2) Carboxylic acid | 3) Amide           | 4) Lactam          |
| Name of FG    | 5) Indole          | 6) Guanidine       | -                  | -                  |
| Configuration | a) S               | b) S               | c) S               | d) S               |
| Hybridisation | e) sp <sup>3</sup> | f) sp <sup>3</sup> | g) sp <sup>2</sup> | h) sp <sup>2</sup> |

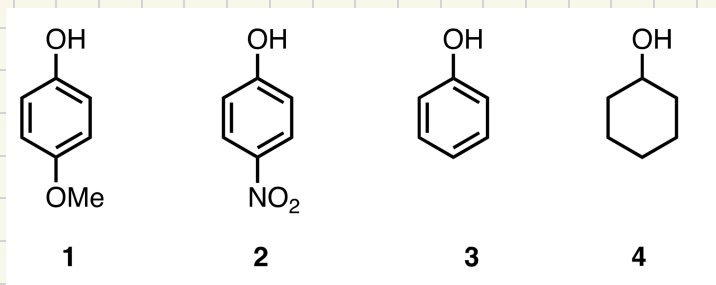
4. Order the compounds according to their first  $pK_a$  in  $H_2O$  and estimate the  $pK_a$  values. Use resonance structures and electronic effects as arguments.

- a) Order of acidity strength: **2** (most acidic) > **3** > **1** > **4** (least acidic).



Phenols are more acidic than water and simple aliphatic alcohols because the negative charge of the anion can be delocalized into the adjacent  $\pi$ -system.

41  
a)



Donor      Strong acceptor      no Substituent      not aromatic

! Kennt pKa's von einigen Molekülen und benutzt sie als Referenz

hier Phenol: 9.95

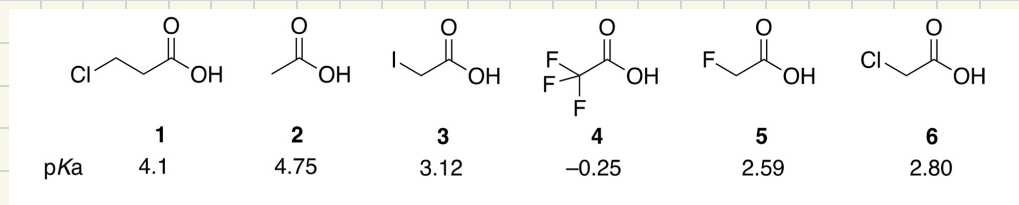
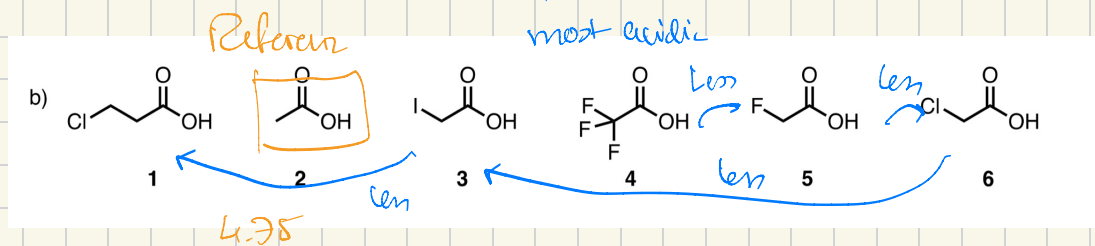
und 2° Alkohol: 16

1 & 2 nicht auswendig lernen

2 < 3 < 1 < 4

7 | 9.95 | 10.2 | 16

Find the extremes  
For sure most acidic



Donor

Acceptor

