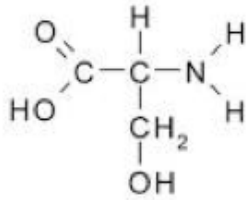


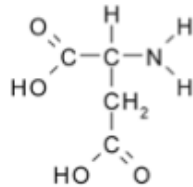
Series 2

Question 1

Serine (ser):



Aspartic acid (asp):



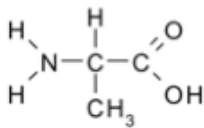
Draw the dipeptide Ser-Asp:

When numbering the amino acids of a protein, by convention the number 1 is assigned to

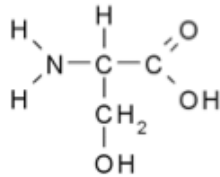
- the amino acid at the N terminus
- the amino acid at the C terminus

Question 2

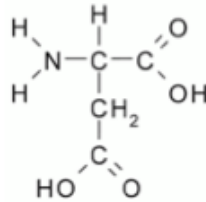
Alanine



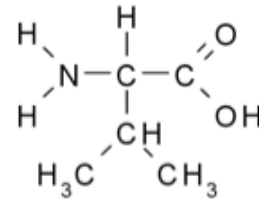
Serine



Aspartic acid



Valine



Order these amino acids from the most hydrophilic to the least hydrophilic :

most hydrophilic:

lest hydrophilic:

\_\_\_\_\_

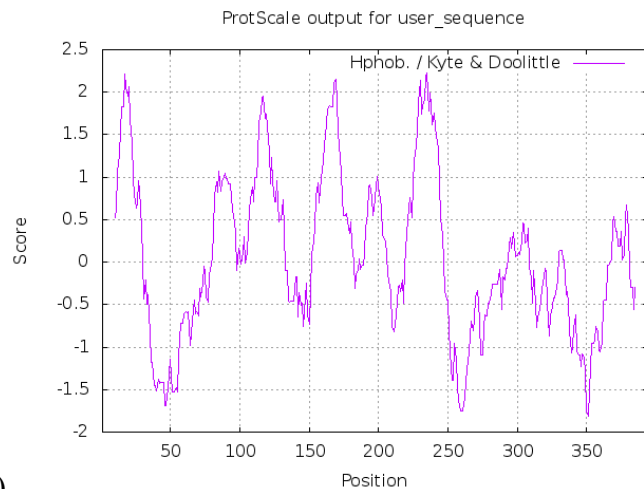
### Question 3

Ions channels must be embedded in the plasma membrane.

As indicated at the end of the class, potassium channels are classified into 4 families.

Based on the hydropathy plot shown, to which family belongs the potassium channel encoded by the gene KCNK3

- a. Inward rectifier (2 TM)
- b. Leakage channel (4 TM)
- c. voltage gated potassium channel (6 TM)
- d. calcium activated potassium channel (7TM)



What is the threshold value indicating a putative transmembrane domain? \_\_\_\_\_

Usually hydropathy plot are generated with a window size of

- a. 10 amino acids
- b. 20 amino acids
- c. 30 amino acids
- d. 40 amino acids

Using the Kyte & Doolittle scale, what is the highest possible value in an hydropathy plot?

Using the Kyte & Doolittle scale, what is the lowest possible value in an hydropathy plot?

### Question 4 Weblem (= problem based on applications available online)

You use an application generating random protein sequences and you generate the hydropathy plots for these random protein sequences.

4.1

Estimate the probability that the hydropathy plot of a random protein sequence will show a putative transmembrane domain.

4.2

Check your prediction by observing the presence or absence of putative transmembrane domains in 3 hydropathy plots based on random protein sequences.

How many plots show a putative transmembrane domain? \_\_\_\_\_