Unit test No. 5

1) **Online unit test** (contains 30 questions randomly chosen from the previous tests).
2) **Paper test** (typical questions).

Sample examination paper

I. (*8 × 1 = 6 points, 2 points – names of the products*)

a) Complete the following reactions:

1) Lys $\xrightarrow[\text{hydroxylation}]{\text{aliphatic}}$

2) Val + $[(CH_3)_3S]^+Cl^- \xrightarrow{\text{alkylation}}$

3) Tyr + α-ketoglutaric acid $\xrightarrow{\text{transamination}}$

4) Phe $+ CH_3OH + HCl \longrightarrow$;

5) Glu $\xrightarrow[\text{deamination}]{\text{oxidative}}$

6) Asn $\xrightarrow[\text{hydrolysis}]{H_2O / H^+}$

7) palmitoyl-CoA $\xrightarrow{+ \text{FAD}}$ A $\xrightarrow[\text{hydration}]{H_2O / H^+}$ B $\xrightarrow{\text{hydrogenation}}$

8) arachidonic acid

b) Write systematic and/or class names for the products.

II. (*5 points*)

a) Hydrolysis of a lipid produces glycerol, serine, phosphoric, palmitic and oleic acids. What group of lipids does this compound belong to? Draw the formula of this lipid and the double bond configuration for the unsaturated acid.

b) Draw the reaction of hydrolysis for this lipid in acidic medium. Indicate and name the bonds that break during the hydrolysis.

III. (*5 points*)

a) Draw the structural formula for the tripeptide Cys-Tyr-Arg. Indicate peptide bonds, C-terminal and N-terminal. Estimate the pH value of the isoelectric point (pI > 7, pI < 7, pI ≈ 7) for this peptide. Explain your answer.

b) Write the hydrolysis reaction for this peptide in KOH solution.