Food Science and Technology MSc Final exam I.
General Food Engineering Skills
Final exam topics
Academic year 2022/2023

A) Food enzymology

1. Enzyme in food industry: definition, sources, nature, market
2. General characteristics of enzyme molecule: structure, active centre, roles of amino acids
3. Overview of enzymes in food applications
4. Amylolytic enzymes and enzymic processes in the starch industry
5. Complex technology for downstream of corn, production of isosugars
6. Enzymes in production of starch-related oligosaccharides, and prebiotic oligosaccharides
7. Pectin and pectolytic enzymes. Enzymic process in fruit and vegetable processing
8. Enzymes in dairy products
9. Enzymes in meat processing
10. Enzymes in production of protein hydrolysates

B) Measurement Theory, Design of Experiments, Process Control in Food Industry

1. Error assessment, Propagation of uncertainty
2. Design of experiments, two level full and fractional factorial plans, properties, assessment
3. Correlation analysis (Pearson and Spearman correlation, cross- and auto-correlation, regression analysis, residuum-analysis)
4. Mechanical properties of foods (traditional and dynamic methods)
5. Machine vision systems (setup, algorithms for characterization of color, shape and pattern, applications)
6. Pneumatic and electro-pneumatic control systems (properties, directional valves, operation of cylinders)
7. Hydraulic and electrohydraulic control systems (properties, directional valves, operation of cylinders)
8. Programmable Logic Controllers (PLC) (setup, configuration, functional elements, programming, applications)
9. Closed Loop Control systems (setup, elements and signals, types, performance of continuous/OnOff controls, stability, tuning, control with PLC)
10. Actuators of electronic, mechanic, pneumatic or hydraulic output (properties, applications)

C) Food economy

1. The marketing and marketing concept
2. Porter's model of competitiveness
3. Application of Porter's diamond model to analysis of food industry of your country
4. Cost analysis in food industry
5. Enterprise strategies and innovation management
6. Introduction of new products and their acceptance
7. New product planning and testing to market introduction