Questions for the bachelor's degree examination in the Food Science - Technology and Nutrition program

applicable from the academic year 2024/2025

Questions related to introductory courses

1. Which United Nations Sustainable Development Goals are related to the food system and why/how?
2. Major/significant global challenges of unsustainable food system and examples of actions/steps/strategies to overcome them.
3. Proteins and carbohydrates – characteristic elements of their chemical structure, classification according to the chemical structure (with specific examples), and methods of their structure presentation (Fischer projection, Haworth projection).
4. Chemical and enzymatic modifications of fats – methods, consequences and the use of modified lipids in food technology.
5. Maillard reactions in food sources and products: stages, compounds, formation of flavour and colour.
6. Characterization of oxidative rancidity in oils: stages of autooxidation, primary and secondary lipid oxidation products, impact on human health.
7. Prokaryotic and eukaryotic microorganisms - types, basic features, cell components, reproduction.
8. Characteristics of the primary plant-based raw materials of the food industry.
9. Characteristics of the animal-origin raw materials in the food industry.
10. The factors affecting the growth of microorganisms in the environment and food – temperature, pH, aw, oxygen ratio, and food components.
11. Microbial contamination of food – sources of microorganisms, effects of spoilage, and the prevention in the context of food preservation principles.
12. Specify the primary raw materials used in the chosen branch of the food industry.
13. Outline the product segments manufactured by the chosen branch of the food industry.
14. Macronutrients (proteins, fats, and carbohydrates) - their functions in the body, major dietary sources, and nutrition recommendations.
15. Vitamins and minerals: role, symptoms of deficiencies and excesses, primary dietary sources, nutrition recommendations.
16. Describe the functions of the digestive system, with a particular focus on the digestion and absorption of macronutrients.
17. The structural and functional organization of the nervous system and its functions in the organism.
18. Types of muscles and their functions in the organism.
19. Describe the essential equipment/apparatus for temperature measurement used in food industry.
20. Describe the basic types of equipment used in mixing during food production.
21. Describe the chromatographic methods used in food analysis.
22. Describe the thermal methods used in food analysis.
23. Describe the spectroscopic methods (IR, NMR and UV) used in food analysis.
24. Tools used in the dietary assessment.
25. Methods of measuring body composition.
26. Nutritional problems in the selected population and a proposal for changes.
27. Application of sensory analysis in product evaluation. Present selected methods used in sensory analytical research and consumer tests.
28. Present the factors influencing the reliability and repeatability of sensory evaluations of products.
29. Define and explain the significance of “cultural influences” in consumer behaviour.
30. Discuss the Total Food Quality Model used to analyze consumer food quality perception.

Questions related to major courses

1. Methods of food preservation.
2. Characteristics of the primary mechanical, diffusion and thermal processes in food processing.
3. Technology used in the production of a particular food concentrate product.
4. Technology used in the production of a selected fruit, vegetable or cereal product.
5. Characteristics of basic heat transfer mechanisms.
6. Describe the basic methods of food drying.
7. Factors influencing the composition and hygienic quality of milk.
8. Characterize meat quality defects.
9. Characteristics of selected animal raw materials use as food (for example, meat, eggs and milk nutritional value, chemical composition, etc.).
10. Characteristics of mine cabbage and nightshade vegetables used as food (for example, edible parts, the purpose of production and cultivation, processing directions, bioactive compounds content, nutritional value, pro-healthy properties).
11. Present requirements for microorganisms used in food biotechnology.
12. Describe the production process of the chosen biotechnological product for use in food technology.
13. Describe factors influencing the efficiency of biotechnological processes and ways to improve them.
14. Sources of food mould and the hazards to human health.
15. Give a few examples of food- and/or waterborne pathogenic bacteria and describe their source or sources, associated foods and consequences for human health.
16. What are the main stages of designing a new product? Give a brief explanation of all of them.
17. Using a selected example, please describe the use of one or two categories of food additives.
18. Advantages and disadvantages of culinary processing and its effect on food quality.
19. Characteristics of individual stages of culinary processing (culinary pretreatment, heat treatment).
20. Safety of food packaging.
21. New solutions in food packaging.
22. Describe the principles of dietary management in a selected diet-related disease (type 2 diabetes, obesity, cardiovascular disease, hypertension).
23. Characterize the principles of the elimination diet and discuss potential problems in its implementation using a selected example: celiac disease or allergy to cow's milk proteins.
24. Nutrition of men and women of reproductive age (including during pregnancy and lactation): role of nutrition/diet, nutritional recommendations, reproductive tract disorders, and infertility.
25. Characteristic of functional layout for food service/industry facilities.
26. Rules for calculating area for individual food service/industry plant departments.
27. What are the main threats to food safety in food production, and how can they be controlled?
28. How do quality management systems help ensure food safety and quality?
29. Definition and scope of Good Manufacturing Practice (GMP) and Good Hygiene Practice (GHP).
30. List the steps and principles of the Hazard Analysis and Critical Control Points (HACCP) in order of implementation.