ITMO University

A list of exam question topics for the Master's program "Food Quality and Safety"

1. General qualities of food products; their role in human life.
2. Plant-based raw food material. Macro- and micronutrients in food products.
3. Biological value of food products.
4. Energy value of food products. Daily energy needs of the human body.
5. Safety-related parameters and criteria for plant-based products.
6. Principles of the processing of plant-based raw material (according to Prof. Yakov Nikitinsky). Fundamentals of biosis, anabiosis, cenoanabiosis, and abiosis; their application in the processing of raw plant material.
7. Classification of proteins, their functions. Protein deficiency and its solutions.
8. Role of protein in human nutrition. Protein requirements; protein presence in food products and the biological value of proteins of different origins.
9. Aminoacids make-up of plant-sourced proteins. Daily protein requirements in humans.
10. Denaturation and degradation of proteins during the processing of food products.
11. Lipids. Classification, presence in food products, biological value.
12. Nutritional value of food products.
13. Mono-, di-, and oligosaccharides. Sources, structure, physiological functions.
14. Polysaccharides of plant-based food products. Sources of dietary fibers. Physiological functions.
15. Ferments (enzymes). General qualities and classification. Use of ferments in food technologies.
16. Oxidase enzymes. Use of oxidases in food raw material processing.
17. Hydrolase enzymes. Use of hydrolases in food raw material processing.
18. Fat-soluble vitamins. Biological functions, natural sources, conditions for preservation within food products.
19. Water-soluble vitamins. Biological functions, natural sources, conditions for preservation within food products.
20. Mineral substances and their biological functions.
21. Water. Its role in the function of the human body. Water in raw material and food products. Daily water requirements in humans.
22. Organoleptic indicators of the quality of food products: color, taste, smell, consistency.
23. Toxicants. Key scenarios of contamination in food products and raw material. Food chains.
24. Classification of substances based on toxicity.
25. Classification and application of food additives.
26. Food coloring. Natural dye. Color-correcting substances.
27. Chemical preservatives in food technologies.
28. Microbiological indicators of food product safety.
29. Sanitary and hygienic requirements in food product safety.
30. Structure-forming agents in food systems: classification, properties, and applications.