

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

**EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE IN
HUMAN NUTRITION AND DIETETICS**

HNDS 424: FUNCTIONAL FOODS AND NUTRACEUTICALS

STREAMS: BSC HNDS Y4S1

TIME: 2 HOURS

DAY/DATE: MONDAY 16/12/2024

2.30 P.M – 4.30 P.M.

INSTRUCTIONS:

- Answer **ALL** questions
- Do not write anything on the question paper
- **No** use of mobile phones or any other unauthorized materials
- Write your answers legibly and use your time wisely

SECTION A: MULTIPLE CHOICE QUESTIONS [ONE MARK EACH] [20MARKS]

1. Which of the following is NOT a characteristic of functional foods?
 - a) Provide essential nutrients
 - b) Only consumed for energy
 - c) Promote better health
 - d) Contain bioactive compounds

2. Which bioactive component is commonly found in soybeans and linked to reduced risk of cardiovascular disease?
 - a) Omega-3 fatty acids
 - b) Flavonoids
 - c) Isoflavones
 - d) Anthocyanins

3. Nutraceuticals are defined as:
 - a) Foods that provide energy
 - b) Supplements taken to cure diseases
 - c) Substances that provide medical or health benefits
 - d) Processed foods with preservatives

4. What are prebiotics primarily responsible for in the human body?
 - a) Improving digestion
 - b) Boosting immunity
 - c) Feeding beneficial gut bacteria
 - d) Providing antioxidants

5. Which functional food is known for its high levels of beta-glucan, beneficial for reducing cholesterol levels?
 - a) Oats
 - b) Green tea
 - c) Garlic
 - d) Flaxseeds

6. Which chronic disease can be prevented by regular consumption of omega-3 fatty acids?
 - a) Type 2 diabetes
 - b) Heart disease
 - c) Osteoporosis
 - d) Alzheimer's disease

7. The following are functional foods except:
 - a) Probiotics
 - b) Whole grains
 - c) Processed snacks
 - d) Fortified cereals

8. The science of functionality in foods is concerned with:
 - a) Nutrient content
 - b) How ingredients affect body functions
 - c) Taste and flavor of foods
 - d) Food packaging and marketing

9. Which of the following is considered a nutraceutical?
 - a) Caffeine
 - b) Probiotic yogurt
 - c) Herbal extract supplements
 - d) Vitamin C-fortified water

10. Which regulatory body oversees the approval and labeling of functional foods in Kenya?
 - a) KEBS
 - b) FDA
 - c) WHO
 - d) USDA

11. Flavonoids are bioactive components commonly found in:
 - a) Red meat
 - b) Dairy products
 - c) Fruits and vegetables
 - d) Processed sugars

12. Which of the following is an example of a dietary supplement?
 - a) A fortified breakfast cereal
 - b) A vitamin D capsule
 - c) Fresh fruits and vegetables
 - d) Packaged snacks with additives

13. The primary role of probiotics in functional foods is to:
 - a) Provide dietary fiber
 - b) Increase calorie content
 - c) Improve gut health
 - d) Enhance brain function

14. Functional foods and nutraceuticals can prevent chronic diseases such as:
 - a) Common cold
 - b) Heart disease and cancer
 - c) Hair loss
 - d) Stomach ulcers

15. Which of the following is a key component in functional food product development?
 - a) Market demand
 - b) Aesthetic packaging
 - c) Bioavailability of nutrients
 - d) Cost of production

16. A major trend in consumer perspectives toward functional foods is:
 - a) Preference for natural and organic ingredients
 - b) Reducing intake of functional foods
 - c) Consumption of only processed snacks
 - d) Avoidance of bioactive ingredients

17. Which of the following bioactive compounds in green tea is believed to have antioxidant properties?
- a) Beta-carotene
 - b) Catechins
 - c) Lycopene
 - d) Phytosterols
18. Which bioactive component in garlic is believed to help reduce the risk of heart disease?
- a) Allicin
 - b) Lycopene
 - c) Resveratrol
 - d) Beta-carotene
19. Which bioactive component is found in turmeric and is known for its anti-inflammatory properties?
- a) Curcumin
 - b) Beta-carotene
 - c) Flavonoids
 - d) Polyphenols
20. Which aspect is key in the future direction of functional foods?
- a) Focus on low-cost ingredients
 - b) Exploration of personalized nutrition
 - c) Elimination of health claims
 - d) Limiting bioactive components in food products

SECTION B: SHORT ESSAY QUESTIONS [30 MARKS]

1. Explain the following concepts as used in functional foods and nutraceuticals. [6 marks]
- i. Bioactive compound
 - ii. Nutrigenomics
 - iii. Prebiotics
2. Explain the importance of regulatory and legal considerations in the marketing of functional foods and dietary supplements. [4 marks]
3. Explain two (2) major health benefits associated with the consumption of probiotics? Provide examples of food sources. [4 marks]
4. State any four (4) bioactive components in functional foods that contribute to chronic disease prevention.. [4 marks]

5. Differentiate between dietary functional foods and nutraceuticals with relevant examples. [4 marks]
6. Highlight four (4) factors that influence consumer perspectives toward functional foods. [4 marks]
7. Explain two (2) common extraction and isolation techniques for bioactive compounds in functional foods. [4 marks]

SECTION C: LONG ESSAY QUESTIONS [20 MARKS]

1. With the increasing prevalence of chronic diseases, functional foods play a key role in prevention strategies. Discuss the role of functional foods in the prevention of cardiovascular diseases, cancer, and diabetes. [10 marks]

 2. Discuss the mandatory labeling requirements for functional foods and nutraceuticals. [10 marks]
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