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## BRAINWARE UNIVERSITY

Term End Examination 2024-2025

Programme – B.Sc.(FND)-Hons-2022

Course Name – Nutraceuticals and Functional Food

Course Code - BFNC602

( Semester VI )

Full Marks : 60

Time : 2:30 Hours

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

### Group-A

(Multiple Choice Type Question)

1 x 15=15

1. Choose the correct alternative from the following :

(i) Which of the following best defines a nutraceutical?

- |   |  |
|---|--|
| a) A food supplement containing vitamins and minerals           | b) A food or food component that provides medical or health benefits, including the prevention and/or treatment of disease |
| c) A genetically modified food with enhanced nutritional value. | d) A traditional medicine derived from plants.   |

(ii) Which of the following is NOT a typical source of phytochemicals?

- |                    |                     |
|--------------------|---------------------|
| a) Fruits          | b) Vegetables       |
| c) Animal products | d) Herbs and spices |

(iii) Lycopene, a potent antioxidant, is found abundantly in:

- |            |             |
|------------|-------------|
| a) Carrots | b) Tomatoes |
| c) Spinach | d) Broccoli |

(iv) Probiotics are beneficial

- |             |             |
|-------------|-------------|
| a) Vitamins | b) Minerals |
| c) Bacteria | d) Enzymes  |

(v) Which of the following is considered a functional food?

- |                   |                                  |
|-------------------|----------------------------------|
| a) White bread    | b) Fortified milk with vitamin D |
| c) Processed meat | d) Sugary drinks                 |

(vi) Which category of compounds do carotenoids belong to?

- |                       |                   |
|-----------------------|-------------------|
| a) Zoo chemicals      | b) Phytochemicals |
| c) Microbial products | d) Minerals       |

(vii) Where can microbes beneficial to human health be found?

- |                                  |                |
|----------------------------------|----------------|
| a) Only in fermented foods       | b) In the gut  |
| c) Only in probiotic supplements | d) On the skin |

(viii) How do functional foods differ from conventional foods?

- a) Functional foods are always organically grown.  
b) Functional foods provide additional health benefits beyond basic nutrition.  
c) Functional foods are always more expensive.  
d) Functional foods are only available in health food stores.
- (ix) What is the significance of studying the history of food use?  
a) It helps us understand the traditional uses of foods for health and well-being.  
b) It helps us identify new food sources.  
c) It helps us develop new cooking techniques.  
d) It helps us appreciate different cultures.
- (x) Which of the following is an example of a microbial product with beneficial properties?  
a) Antibiotics  
b) Toxins  
c) Allergens  
d) Pesticides
- (xi) Which of the following is a potential source of probiotics?  
a) Fermented foods like yogurt and kimchi  
b) Refined grains like white bread  
c) Processed meats like sausages  
d) Sugary drinks like soda
- (xii) When an oxidant gains electrons, its own oxidation number  
a) Increases  
b) Decreases  
c) Remains the same  
d) Becomes zero
- (xiii) A client wants to manage their blood sugar levels. Which type of fibre would be MOST beneficial for them to consume?  
a) Soluble fibre  
b) Insoluble fibre  
c) Both soluble and insoluble fibre  
d) Neither type of fibre
- (xiv) A client is lactose intolerant. Which of the following probiotic sources would be suitable for them?  
a) Yogurt  
b) Kefir  
c) Sauerkraut  
d) All of these
- (xv) Which of the following is a type of soluble fiber?  
a) Cellulose  
b) Hemicellulose  
c) Pectin  
d) Lignin

### Group-B

(Short Answer Type Questions)

3 x 5=15

2. How can incorporating functional foods affect overall well-being? (3)
3. Give an example of a functional food and its benefit. (3)
4. A patient with chronic constipation is advised to increase their dietary fibre intake. What specific types of fibre and food sources would you recommend, and why? (3)
5. A patient with lactose intolerance is looking for probiotic options. What types of fermented milk products would you recommend, and what specific bacterial strains should they look for on the label? (3)
6. Design a targeted food fortification strategy to address iron deficiency anemia in adolescent girls in a specific region of India. What food vehicles, micronutrients, and delivery mechanisms would be most effective, and how would the program be monitored and evaluated? (3)

OR

- Create a comprehensive plan to address micronutrient deficiencies in a vulnerable population (e.g., pregnant women, children) using a combination of food fortification and GM food strategies. How can these strategies be integrated to maximize impact and ensure sustainability? (3)

### Group-C

(Long Answer Type Questions)

5 x 6=30

7. How do omega-3s benefit health? (5)

8. Explain how antioxidants protect cells from damage. (5)
9. Analyze the relationship between prebiotic intake and immune function. (5)
10. Analyze the role of probiotics in preventing antibiotic-associated diarrhea. (5)
11. Analyze the preclinical and clinical study designs used to evaluate the efficacy of a novel nutraceutical ingredient. How do these studies address safety and efficacy? What are the limitations of these study designs, and how could they be improved to ensure the scientific rigor of the data? (5)
12. Evaluate the evidence supporting the use of prebiotics for specific health conditions like IBS. (5)

OR

Evaluate the effectiveness of current health claim standards in protecting consumers from misleading information. (5)

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