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Roll no. _____

M.Tech Food Technology
End Semester Examination (Jan-2024)
Course Title & Code: Food Chemistry and Microbiology (MFTC-101)

2024
Sem-1.

Time: 3 hours **Max Marks: 60**

Read the instructions carefully. Marks are mentioned against each question. Section A is compulsory. Section B and Section C have internal choices.

SECTION-A (Attempt all: 12 marks)

Multiple Choice Questions: (8)

1. Which of the following is NOT a common nutrient added during food fortification?
a) Vitamin D b) Calcium c) Monosodium glutamate d) Zinc

2. Which property of water is responsible for its ability to dissolve many substances?
a) Cohesion b) Adhesion c) Polarity d) Surface tension

3. What does "sarcina sickness" refer to in the context of beer brewing?
a) Excessive alcohol content b) Undesirable color changes
c) Unpleasant odors and flavors d) Over-carbonation

4. What is a common sensory characteristic associated with ropiness in milk?
a) Sour taste b) Slimy or viscous mouthfeel
c) Increased sweetness d) Bitter after-taste

5. Which property of egg albumen is believed to contribute to its antimicrobial activity?
a) High moisture content b) Low protein content
c) Presence of lysozyme d) Lack of oxygen

6. Which food sources are rich in omega-3 fatty acids?
a) Olive oil and avocados b) Fatty fish, flaxseeds, and walnuts
c) Sunflower oil and pumpkin d) Butter and red meat

7. How does the botulinum toxin exert its toxic effects on the nervous system?
a) Inhibits blood clotting b) Blocks neurotransmitter release
c) Promotes excessive muscle contraction d) Stimulates immune responses

8. How can probiotics affect the composition of the gut microbiota to influence cholesterol levels?
a) By increasing the population of cholesterol-producing bacteria
b) By promoting the growth of bacteria that convert bile acids into cholesterol
c) By modulating the balance of gut bacteria and enhancing bile acid deconjugation
d) By inhibiting the growth of all bacteria in the gut

Fill in the blanks: (4)

1. The compound responsible for pungency in pepper is _____.
2. _____ and _____ are examples of putrefactive and spore producing bacterial species commonly found in foods.
3. Toxins produced by bacteria that is specific for intestinal cells and causes gastroenteritis is referred to as _____.
4. _____ deficiency disease is caused by a lack of Vitamin C.

Section –B (Short answer type: Attempt any 4)
(6*4=24 marks)

1. Explain the process of meat curing and elaborate on the changes that myoglobin undergoes during curing. Use a flow diagram.

2. Elaborate on fungal spoilage of eggs. Albumen does not support microbial growth. Comment.

3. Give a detailed account on the chemistry of flavor volatiles generated from sulpher based vegetables.

4. Define prebiotics and synbiotics. Enlist the health benefits of prebiotics.

5. What is denaturation? Classify proteins on the basis of structure.

Section-C (Long answer type: Attempt any 2)
(12*2=24 marks)

1. Explain the Maillard browning reaction in foods. Include key components involved and the impact on color and flavor. What is the primary chemical reaction involved in caramelization, and how does it differ from the Maillard browning? Provide a concise explanation of the key distinctions.
2. Explain oxidative rancidity, detailing the mechanism of free radical generation during this process. Additionally, provide key measures to prevent oxidative rancidity in foods.
3. Define fermented foods. Differentiate between batch and continuous fermentation. Elaborate on the microbiology of any one dairy based fermented food and discuss related microbiological defects.

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CO-PO Mapping:

Section A	Section B	Section C
MCQ: CO1, CO3, CO4, CO6, CO7, PO1, PO2, PO7.	1. CO1, CO4, CO5, PO1, PO7	1. CO1, CO2, PO1, PO4, PO8
FIB: CO3, CO5, CO6, PO1, PO2	2.CO6, PO3, PO9	2. CO2, CO4, CO5, PO1, PO8, PO10
-	3.CO2, PO1, PO5	3. CO7, PO2, PO8
-	4. CO3, PO1, PO6	-
-	5. CO5, PO1	-