BRAINWARE UNIVERSITY

Term End Examination 2024-2025
Programme – B.Sc.(FND)-Hons-2022
Course Name – Food Microbiology and Immunology
Course Code - BFNC502
(Semester V)

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) Identify the scientist known as the father of modern taxonomy.
a) Louis Pasteur b) Robert Koch
c) Carolus Linnaeus d) Anton van Leeuwenhoek

(ii) State the correct format for writing a scientific name.
a) Genus species b) genus Species
c) Genus Species d) GENUS species

(iii) Explain the principle of staining to help in visualizing cellular structures.
a) Increases specimen size b) Enhances contrast of structures
c) Alters chemical composition d) Reduces visibility

(iv) Choose the appropriate staining method to reveal the presence of endospores.
a) Endospore staining b) Gram staining
c) Capsule staining d) Negative staining

(v) Describe the purpose of using selective media in microbial culture.
a) To enhance the growth of all microorganisms b) To inhibit the growth of specific microorganisms
c) To differentiate between different types of microorganisms d) To support the growth of a broad spectrum of microorganisms

(vi) List the primary phase of growth where bacteria adapt to their environment but do not increase in number.
a) Log phase b) Lag phase
c) Stationary phase d) Death phase

(vii) Determine the appropriate medium for isolating and differentiating lactose-fermenting from non-lactose-fermenting Gram-negative bacteria.

a) MacConkey Agar
b) Blood Agar
c) Sabouraud Dextrose Agar
d) Mannitol Salt Agar

(viii) Explain the main factors contributing to spoilage in cereals:

a) Moisture and temperature control
b) High sugar content
c) Lack of oxygen
d) Low humidity

(ix) Name the type of microorganism used in vinegar production.

a) Acetic acid bacteria
b) Lactic acid bacteria
c) Yeast
d) Molds

(x) Describe probiotics.

a) Live microorganisms that confer health benefits when consumed in adequate amounts
b) Microorganisms added to food to improve its shelf life
c) Cultures that are used in alcoholic fermentations
d) Chemicals added to food to enhance flavor

(xi) Implement the correct fermentation method for tempeh production.

a) Fermenting soybeans with Rhizopus oligosporus to develop texture
b) Using yeast to convert sugars into alcohol
c) Adding lactic acid bacteria for sour flavor
d) Using Lactobacillus to increase vitamin content

(xii) Interpret why Lactobacillus is commonly used in yogurt production.

a) It produces ethanol, giving the yogurt its flavor.
b) It helps in coagulating the milk proteins to form a solid structure.
c) It converts sugars into lactic acid, giving yogurt its characteristic tangy taste.
d) It prevents the growth of unwanted molds in the yogurt.

(xiii) What type of immunity is conferred by vaccination?

a) Passive natural immunity
b) Active natural immunity
c) Active artificial immunity
d) Passive artificial immunity

(xiv) Which of the following best describes a hapten?

a) A complete antigen that induces antibody formation
b) A small molecule that can bind to antibodies but cannot trigger an immune response by itself
c) A type of cytokine involved in immune cell signaling
d) A large protein capable of inducing T-cell activation

(xv) What is the role of Major Histocompatibility Complex (MHC) in the immune response?

a) Activates innate immunity
b) Presents antigens to T cells
c) Produces antibodies
d) Stimulates B cell proliferation

Group-B

(Short Answer Type Questions) 3 x 5=15

2. Analyze the differences between the stationary phase and the death phase in a microbial growth curve. (3)
3. Describe how temperature affects the growth rate of microorganisms. (3)
4. Describe the autoclave method to sterilizes media. (3)
5. Determine the basic structure of an antibody and explain its function in the immune response. (3)

6. Evaluate the role of fermentation in the production of soya sauce, including the microorganisms involved and the fermentation stages. (3)

OR

Analyze the impact of fermentation on the flavor profile of traditional Indian foods, using idli and dosa. (3)

Group-C

(Long Answer Type Questions) 5 x 6=30

7. Analyze the factors affecting the microbial growth. (5)
8. Analyze the advantages and disadvantages of using complex media for the growth of various microorganisms in laboratory settings. (5)
9. Develop a protocol for sterilizing heat-sensitive media using filtration and chemical methods. (5)
10. Discuss the structure and function of the major classes of immunoglobulins in the immune system. (5)
11. Evaluate the role of probiotics in fermented dairy products, such as yogurt and kefir, and their impact on human health. (5)
12. Evaluate the significance of fermentation in dairy products, focusing on the production of yogurt and cheese. (5)

OR

Analyze the role of fermentation in the production of traditional fermented foods (5)

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