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**BRAINWARE UNIVERSITY**

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Term End Examination 2025-2026**Programme – M.Sc.(ND)-2025****Course Name – Advanced Food Microbiology****Course Code - MND20405A****(Semester II)****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) Microorganisms present in raw foods mainly originate from:
 - a) Packaging only
 - b) Soil, water, air and handling
 - c) Cooking methods
 - d) Preservatives
- (ii) Biofilms are best described as:
 - a) Communities of microorganisms attached to surfaces
 - b) Free-floating microbes
 - c) Dead cells
 - d) Chemical residues
- (iii) *Listeria monocytogenes* is especially dangerous for:
 - a) Children
 - b) Pregnant women
 - c) Healthy adults
 - d) Athletes
- (iv) *Clostridium botulinum* produces:
 - a) Enterotoxin
 - b) Neurotoxin
 - c) Cytotoxin
 - d) Mycotoxin
- (v) Psychrotrophic bacteria mainly spoil:
 - a) Canned foods
 - b) Frozen foods
 - c) Refrigerated foods
 - d) Dry foods
- (vi) Slime formation in meat is due to:
 - a) Protein coagulation
 - b) Bacterial polysaccharides
 - c) Fat oxidation
 - d) Water loss
- (vii) Soft rot in vegetables is commonly caused by:
 - a) *Erwinia*
 - b) *Salmonella*
 - c) *Listeria*
 - d) *Staphylococcus*
- (viii) Kombucha fermentation involves:
 - a) Only bacteria
 - b) Only yeast
 - c) Bacteria and yeast symbiosis
 - d) Molds only
- (ix) The main enzyme used in PCR is:

- a) DNA ligase
- c) Taq polymerase
- (x) Select the full form of qPCR
 - a) End-point PCR
 - c) Nested PCR
- (xi) Predict the uses of Biosensors
 - a) Food packaging
 - c) Cooking food
- (xii) Categorize the type of biomolecule detected by Western blot in molecular identification.
 - a) DNA
 - c) Proteins
- (xiii) Categorize the primary function of the PCR technique in molecular biology.
 - a) Protein detection
 - c) Cell counting
- (xiv) Select the components of microbiome for which High Pressure Processing mainly used (inactivation method).
 - a) Spores only
 - c) Enzymes only
- (xv) GMP refers to:
 - a) Good Manufacturing Practices
 - c) Global Management Plan
- b) RNA polymerase
- d) Reverse transcriptase
- b) Quantitative PCR
- d) Conventional PCR
- b) Rapid pathogen detection
- d) Preservation
- b) RNA
- d) Lipids
- b) DNA amplification
- d) Enzyme analysis
- b) Vegetative cells
- d) Toxins
- b) General Microbial Protocol
- d) Good Marketing Practice

Group-B

(Short Answer Type Questions)

3 x 5=15

- 2. Illustrate the effect of temperature on food spoilage. (3)
- 3. Formulate strategies using FSSAI standards to improve food safety. (3)
- 4. What is a biofilm? State its significance in food environments. (3)
- 5. Explain how mycotoxins contaminate food. (3)
- 6. Analyze the importance of validation of testing methods. (3)

OR

Analyze one application of microarrays in food microbiology. (3)

Group-C

(Long Answer Type Questions)

5 x 6=30

- 7. Describe microbial spoilage of fruits and vegetables. (5)
- 8. Compare the roles of FSSAI, FDA, and EFSA. (5)
- 9. Describe biofilms? Discuss their formation and significance in food environments. (5)
- 10. Describe emerging and re-emerging foodborne pathogens. (5)
- 11. Analyze the importance of microbial risk assessment in food safety. (5)
- 12. Analyze metagenomics and its significance in food microbiology. (5)

OR

Analyze the principle of MALDI-TOF and its role in microbial identification. (5)

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