

PSG COLLEGE OF ARTS & SCIENCE  
(AUTONOMOUS)

MSc DEGREE EXAMINATION MAY 2024  
(Second Semester)

Branch – CLINICAL NUTRITION AND DIETETICS

MAJOR ELECTIVE COURSE – I: ADVANCED FOOD MICROBIOLOGY

Time: Three Hours

Maximum: 75 Marks

**SECTION-A (10 Marks)**  
Answer ALL the questions  
ALL questions carry EQUAL marks (10 × 1 = 10)

Question No.	Question	K Level	CO
1	What is the primary mode of action for bacteria in causing food spoilage? a. Enzymatic browning                      b. Oxidation c. Fermentation                                  d. Freezing	K1	CO1
2	What is the main characteristic of psychrotrophic bacteria in relation to food spoilage? a. Prefer high temperatures b. Grow well in refrigerated conditions c. Require anaerobic environments d. Are sensitive to acidic conditions	K2	CO1
3	Choose the microorganisms that can grow in the absence of oxygen. a. Anaerobes                                      b. Aerobes c. Facultative anaerobes                      d. Microaerophiles	K1	CO1
4	Identify the process of preserving food by reducing its water content. a. Pasteurization                                  b. Canning c. Dehydration                                    d. Fermentation	K2	CO2
5	Identify the process of heating liquids to a temperature that kills most bacteria, yeasts, and molds, but not necessarily all spores. a. Pasteurization                                  b. Autoclaving c. Filtration                                        d. Incineration	K2	CO3
6	Which type of microorganisms is most likely responsible for causing spoilage in high-sugar and high-acid food products, such as jams and fruit juices? a. Bacteria                      b. Yeasts                      c. Molds                      d. Viruses	K1	CO3
7	Botulism is a rare but serious foodborne illness caused by the toxin produced by which bacterium? a. Escherichia coli (E. coli)                      b. Clostridium botulinum c. Salmonella                                        d. Listeria monocytogenes	K1	CO4
8	Genetically modified microorganisms (GMOs) are used in food biotechnology for..... a. Fermentation                                      b. Nutrient extraction c. Pest control                                        d. DNA analysis	K2	CO4
9	Which international organization is responsible for setting food safety standards and guidelines on a global scale? a. FDA (Food and Drug Administration) b. EFSA (European Food Safety Authority) c. WHO (World Health Organization) d. USDA (United States Department of Agriculture)	K1	CO5
10	Which international standard provides a framework for implementing a quality management system in the food industry? a. ISO 14001                      b. ISO 9001                      c. ISO 22000                      d. ISO 18001	K1	CO5

Cont...

**SECTION - B (35 Marks)**

Answer ALL questions

ALL questions carry EQUAL Marks (5 × 7 = 35)

Question No.	Question	K Level	CO
11.a.	Demonstrate the cultural characteristics and biochemical activities of yeast.	K2	CO1
(OR)			
11.b.	Relate the biochemical changes brought by microorganisms in daily kitchen life.	K2	CO1
12.a.	Illustrate the growth curve of microbial cultures.	K2	CO2
(OR)			
12.b.	Discuss the various factors involved in control of microbial growth.	K6	CO2
13.a.	Explain on spoilage of meat.	K2	CO3
(OR)			
13.b.	Explain bacteriology of water.	K2	CO3
14.a.	Examine the symptoms and potential complications associated with Salmonella infection.	K4	CO4
(OR)			
14.b.	Outline the specific advancements that have revolutionized this age-old process- fermentation.	K2	CO4
15.a.	Elaborate the functions of USFDA and EFSA.	K6	CO5
(OR)			
15.b.	Evaluate the steps in implementation of HACCP.	K5	CO5

**SECTION -C (30 Marks)**

Answer ANY THREE questions

ALL questions carry EQUAL Marks (3 × 10 = 30)

Question No.	Question	K Level	CO
16	Discuss the microbial spoilage of food products, focusing on the biochemical reactions responsible for changes in flavor, texture, and safety.	K3	CO1
17	Examine the various methods used to inhibit or eliminate microorganisms in food.	K4	CO2
18	Analyze the microbial processes underlying food spoilage and the factors influencing microbial growth in different food matrices.	K4	CO3
19	Explain the selection and optimization of microbial strains, fermentation conditions, and downstream processing techniques to maximize product yields and achieve sustainable bioproduction.	K5	CO4
20	Evaluate the role of food safety management standards, such as ISO 22000 and the Food Safety Modernization Act (FSMA), in enhancing food quality and compliance with regulatory requirements.	K5	CO3