Name: **Enrolment No:**	

UPES

End Semester Examination, May 2025

Course: Microbial food spoilage & food borne diseases Semester : VI

Program: BSc. Microbiology Duration : 3 hours

Course Code: HSMB3006P Max. Marks: 100

Instructions:

S. No.	Section A Short answer questions/ MCQ/T&F (20Qx1.5M= 30 Marks)	Marks	Cos
Q 1	Identify which of the following is NOT a biological hazard in food. a) Heavy metals *b) Clostridium botulinum* c) *Salmonella* d) Norovirus	**1.5**	**CO2**
Q 2	Recall, that the thermal death time of a microorganism is affected by: a. pH b. Temperature c. Water activity d. All of the above	**1.5**	**CO2**
Q 3	Identify the correct answer/s. The natural microflora of eggs is primarily found: a) In the yolk b) In the shell c) In the albumen d) Evenly distributed throughout the egg	**1.5**	**CO2**
Q 4	Identify the main source of contamination in milk. a) Soil b) Water c) Air d) Improper handling	**1.5**	**CO1**
Q 5	Identify the purpose of alkaline phosphatase testing in milk. a. Detect bacterial contamination b. Verify pasteurization efficiency c. Identify fat content d. Improve flavor	**1.5**	**CO1**
Q 6	Spot the food product is most susceptible to botulism contamination. a) Fresh vegetables b) Canned low-acid foods c) Dried fruits d) Pasteurized milk	**1.5**	**CO1**

Q 7	Identify the factor that has maximum influence on microbial growth in refrigerated foods. a. Water activity b. Low temperature c. High pH d. Oxygen content	**1.5**	**CO2**
Q 8	Recall, the role of bacteriocins in food preservation? a. Enhance spoilage b. Act as natural antimicrobial peptides c. Decrease acidity d. Promote fermentation	**1.5**	**CO2**
Q 9	Identify the psychrotrophic foodborne pathogen. a. *Salmonella* b. *Listeria monocytogenes* c. *Clostridium perfringens* d. *Vibrio cholerae*	**1.5**	**CO2**
Q 10	Identify the biological hazard in food. a. Metal fragments b. Pesticides c. Bacterial pathogens d. Excessive salt	**1.5**	**CO1**
Q11	Recall that the temperature danger zone in degree Celsius is a. 25-60°C b. 5-21°C c. 4.4-60°C d. Above 60°C	**1.5**	
Q12	Recall that the facility for food manufacturing/restaurant should be away from: a. Residential area b. Garbage dump c. Waste water discharge d. All of the above	**1.5**	**CO2**
Q13	Recall, that the flow of food and wastewater shall be a. Diagonal b. Parallel c. Unidirectional d. Opposite	**1.5**	**CO2**
Q14	Spot the correct answer. Presence of button of shirt in food is a type of a. Physical hazard b. Chemical hazard c. Pollution d. Biological hazard	**1.5**	**CO2**
Q15	A food manufacturing unit/restaurant is using mineral water to cook the food. Is it conforming to FSSAI regulations? Comment True or False and why?	**1.5**	**CO1**
Q16	Identify the correct answer. Presence of plastic in food is a type of a) Physical hazard b) Chemical hazard c) Pollution d) Biological hazard	**1.5**	**CO1**

Q17	Pick the correct answer. A food manufacturing unit/restaurant should conform to using a. Mineral water b. Potable water c. Packaged bottle water d. Local Himalayan water	**1.5**	**CO1**
Q18	Identify the correct statement. Botulism toxins are _____ a) Neurotoxins b) Cytotoxins c) Myotoxins d) Endotoxins	**1.5**	**CO1**
Q19	Identify the correct statement. Ergotism is caused due to _____ a) *Aspergillus niger* b) *Penicillium notatum* c) *Saccharomyces cerevisiae* d) *Claviceps purpurea*	**1.5**	**CO1**
Q20	Identify the correct statement. Pasteurization is the heat treatment designed to kill a. Vegetative forms of microorganism b. Spore forming forms of microorganism c. Only bacteria d. Both a and b	**1.5**	**CO2**
Section B (4Qx5M=20 Marks)			
Q 1	Differentiate between EHEC and ETEC pathogenic strains of *E. coli*.	**5**	**CO2**
Q 2	Enlist and discuss different types of food hazards.	**5**	**CO1**
Q 3	Define adulteration. Enlist its types and cite examples.	**5**	**CO2**
Q 4	On a cruise chilled salad was served but it led to nausea, vomiting and low grade fever. One person also went on to develop more serious headache, neck stiffness, convulsions and fever. Spot what is the likely pathogen and what is its pathogenesis?	**5**	**CO1**
Section C (2Qx15M=30 Marks)			
Q 1	A medium-scale chicken processing unit faced repeated customer complaints regarding foul odor and discoloration in packed chicken breasts. Upon investigation, the management discovered inconsistent chilling temperatures and occasional delays in packaging. A food safety audit recommended implementing a HACCP plan to ensure product quality and safety. Based on this answer the following: a) Identify potential hazards in the chicken processing chain. (3) b) Define Critical Control Points (CCPs) in this case. (4) c) Suggest monitoring and corrective actions at CCPs. (4) d) Explain the key people involved in HACCP implementation. (3) e) Explain the benefits of HACCP implementation in this scenario. (1)	**15**	**CO2**
Q 2	A food safety inspection team collected samples of groundnuts from a wholesale market during a routine quality check. Laboratory analysis revealed high levels of mycotoxin, exceeding the permissible	**15**	**CO2**

	limit set by regulatory authorities. These groundnuts were intended for use in school meal programs. The lot was immediately recalled, and authorities initiated further investigations into storage and handling practices. a) Explain which mycotoxin is being referred to here. (1) b) Which organism produces them? (1) c) Enlists the types of this mycotoxin. (2) d) Explain which of them is the is a serious concern in food safety. (1) e) Identify the likely reasons for mycotoxin contamination in this case. (2) f) Discuss the adverse health effects that this toxin causes. (2) g) Elaborate a method of detection of this mycotoxin in serum. (6)		
Section D **(2Qx10M=20 Marks)**			
Q 1	a. Describe what is radioactive contamination of food, and how does it occur? (6) b. Elaborate where has it been observed in past? (2) c. Are there any foods in specific where there is high radioactive contamination? (2)	**10**	**CO1**
Q 2	Elaborate pathogenesis and types of food borne diseases caused by *Bacillus cereus*, its diagnosis and treatment.	**10**	**CO1**