Name:

Enrolment No:

UPES

End Semester Examination, December 2024

Course :Food contamination and food borne diseases **Semester : III**

Program : M.Sc.-Microbiology **Duration : 3 Hours**

Course Code: HSMB8015P **Max. Marks:100**

Instructions: All questions are compulsory.

Please read the questions carefully. The paper contains four sections

S. No.	Section A Short answer questions/ MCQ/T&F (20Qx1.5M= 30 Marks)	Marks	COs
Q 1	'Mycotoxins cause food borne infections.' Comment on the statement.	1.5	CO1
Q2	Food borne viruses are a. Norovirus b. Hepatitis A c. Hepatitis B d. All of the above e. a and b	1.5	CO2
Q3	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	CO4
Q4	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	CO4
Q5	Flow of food and wastewater shall be a. Diagonal b. Parallel c. Unidirectional d. Opposite	1.5	CO3
Q6	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
Q7	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	CO3
Q8	What is the full form of HACCP? a) Health Analysis and Critical Control Points b) Health Analysis and Critical Criteria for Production c) Hazard Analysis and Critical Control Points d) Hazard Analysis and Critical Criteria for Production	1.5	CO3

Q9	_____ is the CCP for the processing of milk. a) Removal of fat b) Milking c) Evaporation d) Pasteurization	1.5	CO3
Q10	Botulism is a Hazard in ---------- a. Bottling b. Canning c. Dairy d. Both a and b	1.5	CO2
Q11	The ____ value represents the temperature needed for the thermal destruction curve to traverse one log cycle a) Z-value b) D-value c) T-value d) k-value	1.5	CO1
Q12	What will be the decimal reduction time if the number of organisms at t=0 is 5000 and at t=20 is 500? a) 100 b) 5 c) 1 d) 20	1.5	CO1
Q13	Which of the following microbial control methods does not actually kill microbes or inhibit their growth but instead removes them physically from samples? a) filtration b) desiccation c) lyophilization d) nonionizing radiation	1.5	CO1
Q14	'Is pasteurization the same as sterilization?' Comment whether true or false and reason why.	1.5	CO1
Q15	Horsemeat was found in products labeled as beef across several European countries. This is a punishable offense. Describe what kindly of adulteration is this.	1.5	CO1
Q16	Which of the following microbial control methods actually kills microbes and inhibits their growth? a) Filtration b) Ionising radiation c) Refrigeration d) Use of Biosafety cabinets	1.5	CO1
Q17	Cooked food was kept in shelf below while raw meat was left above in refrigerator. Explain if this is the correct procedure to follow according to FSSAI and why?	1.5	CO3
Q18	Amongst the following is a food allergen as listed by FSSAI. Identify it. a. Rice b. Carrot c. Peanut d. Mango	1.5	CO4

Q19	Match the following A Rancid 1 Fish B Idli 2 Fats C Cheese 3 Steaming D Grill 4 Fats and protein	1.5	CO2
Q20	Arrange based on order of shelf-life (longer shelf life at the end) Raw milk, Bread, Cereal, Banana	1.5	CO1
	Section B **(4Qx5M=20 Marks)**		
Q21	In June 2004 in Kenya, Aflatoxicosis resulted due to consumption of maize. Explain what are Aflatoxins and their types?	5	CO4
Q22	Recall a method for detection of Aflatoxins from blood and serum?	5	CO2
Q23	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	CO2
Q24	Differentiate between two major types of enterotoxigenic *E. coli* and enterohemorrhagic *E. coli*. Sketch the steps in diagnosis of *E. coli*.	5 (4+1)	CO2
	Section C **(2Qx15M=30 Marks)**		
Q 25	A granny kept uncovered steamed pasta out and forgot it for over a day and then consumed after 2 days without heating. She developed symptoms of food borne illness like vomiting, nausea and abdominal pain almost 1 hour after consumption of rice. Based on your knowledge of food borne illnesses and diseases; answer the following a. Identify the illness. b. Describe which agent is responsible for this illness (some characteristics)? c. Illustrate the pathogenesis of the disease. d. Categorize if there are more than one type of clinical manifestations due to this agent, and distinguish between them. e. Summarize the diagnosis and treatment of this disease. f. Name one seafood associated pathogen. g. Name one pathogen associated with poultry. h. Name one pathogen associated with dairy.	15 (1+3+3+3+2+1+1+1)	CO3
Q26	'Surveillance systems and surveys provide vital information about the burden of foodborne illness in the United States, but they do not capture *every* illness. Because only a fraction of illnesses are diagnosed and reported, we need periodic assessments of the total burden of illness to set public health goals, allocate resources, and measure the economic impact of	15 (4+2+2+2+2+3)	CO1

	disease.' Therefore, we estimate." Based on this statement taken from CDC, US; answer the following: 1. Evaluate what are the leading causes of foodborne deaths, hospitalizations, and illnesses across the world? (Enlist all that you know) 2. Estimate which population age groups are serious target and why is it a public health concern? 3. Describe how do these agents and resultant food borne infections differ in India versus in US? 4. State reasons why do they differ in India and US. 5. Explain what MAP (modified atmosphere packaging) and its role is in preserving foods and preventing food borne diseases. 6. Explain Hurdle effect. And, describe how is pickling effective in food preservation?		
Section D (2Qx10M=20 Marks)			
Q 27	Enlist and frame the roles of various factors affecting microbial growth in food.	10 (8+1+1)	CO1
Q28	Biosensors are the next big thing in food industry. Evaluate the role of biosensor in food industry. b. Explain the components of a biosensor and an example where they have been successfully applied. c. Enlist the gold standard methods that FSSAI uses for food nutritional assessment.	10 (4+4+2)	CO1