## LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

## M.Sc. DEGREE EXAMINATION – FOOD CHEMISTRY AND FOOD PROCESSING FIRST SEMESTER – NOVEMBER 2023

## PFP1MC04 - FOOD MICROBIOLOGY, HYGIENE AND SANITATION

	Date: 08-11-2023 Dept. No. Max. : 100 Mark
	Time: 01:00 PM - 04:00 PM
SECTION A V1 (CO1)	
SECTION A – K1 (CO1)	
	Answer ALL the questions $(5 \times 1 = 5)$
1	MCQ
a)	Altering pH by addition of acids to foods can affect, thus decreasing growth of microbes.
	i.enzyme activity
	ii.denature proteins
	iii.denature DNA
b)	iv.All of the above  The "long-incubation" or diarrheal form of <i>Bacillus cereus</i> poisoning is manifested primarily by
U)	abdominal cramps and diarrhea following an incubation period of
	i. 8 to 16 hours.
	ii.24 to 36 hours.
	iii.48 to 72 hours.
	iv.1 to 6 hours
c)	Square Root Model in predictive microbiology is based on the linear relationship between the square
	root of theand temperature.
	i. growth rate
	ii.death rate
	iii.oxygen requirement
	iv.water activity
d)	Weevils and worms found in fruits, vegetables and grains are examples of
	i.Microbial hazard.
	ii.Biophysical hazard.
	iii.Allergenic hazard.
	iv.Novel food hazard.
e)	The system of cleaning and sanitization which does not require the daily dismantling of equipment
	and the process in which the cleaning solution are used once at the lowest strength and discharged into the drain at the end of each cycle is referred to as
	i.Out of place CIP system.
	ii.Single use CIP system.
	iii.Advanced CIP system.
	iv.Reuse CIP system.
SECTION A – K2 (CO1)	
	Answer ALL the questions $(5 \times 1 = 5)$
2	True or False
a)	In natural fermentation, the fermentative microbes are from the raw material, and its initial treatment
	will encourage the growth of an indigenous flora.
b)	Sarcina lutea produces brightly coloured colonies or pigments which give red colour to the spoiling
	food.

A commonly adopted sampling plan method is the Plan for Low Level of Contamination. c) d) Pathogens like *E.coli* can be introduced into food due to the presence of minor cuts, wounds and pus in food handlers. In case of an epidemic, all workers in the food industry need to be vaccinated irrespective of the e) scheduled vaccination. SECTION B - K3 (CO2) Answer any THREE of the following  $(3 \times 10 = 30)$ 3 Classify microbial starter cultures used in food fermentations. Comment on antagonism and symbiosis as important microbial interactions resulting in fermentation, 4 food spoilage and pathogenesis. Draft the sampling procedure for testing of foods involved in food borne outbreaks and spoilage. 6 Comment on the uses of water in the food industry and the methods of water treatment to ensure its 7 Describe microbial biofilm formation and its significance in the food industry. SECTION C – K4 (CO3) Answer any TWO of the following  $(2 \times 12.5 = 25)$ Categorize microbes based on i) their ability to breakdown nutrients available in food 8 ii) their oxygen and temperature requirements. Discuss any five common bacterial food infections. 9 10 Describe the three step process of a PCR technique with its applications, advantages and disadvantages. Give the step wise protocol for planning and implementation of food safety training programs. SECTION D – K5 (CO4) Answer any ONE of the following  $(1 \times 15 = 15)$ Classify food related hazards and elaborate on physical and allergenic hazards. 12 Point out the role of yeast and the microbial reactions that occur during beer fermentation. 13 SECTION E - K6 (CO5) Answer any ONE of the following  $(1 \times 20 = 20)$ i) Diagrammatically represent and explain a bacterial growth curve. 14 (5 marks) ii)Compile the principle, procedure, applications and limitations of the ELISA assay as a rapid testing technique for microbial analysis of foods. Design a check list for inspecting the hygiene and sanitation requirements for the renewal of the 15 license of a Food Business Operation.

&&&&&&&&&&