

Scheme of Valuation/Answer Key

(Scheme of evaluation (marks in brackets) and answers of problems/key)

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

THIRD SEMESTER B.TECH DEGREE EXAMINATION, DECEMBER 2018

Course Code: FT201

Course Name: FOOD MICROBIOLOGY

Max. Marks: 100

Duration: 3 Hours

PART A

<i>Answer any three full questions, each question carries 10 marks.</i>			Marks
1	a)	Robert Koch-Introduction	(1)
		4 postulates- each postulate carries 0.5 mark	(2)
	b)	Germ theory of disease- statement	(2)
	c)	Roll tube technique- isolation of stringent anaerobes	(1)
		Preparation of pre-reduced media	(1)
		Procedure	(2)
		Diagram	(1)
2	a)	Lyophilization- freeze drying-Introduction	(1)
		Procedure	(2)
		Diagram	(1)
		Advantages and disadvantages	(1)
	b)	Grams staining- Christian Gram	(1)
		Gram positive- characteristics	(1.5)

		Gram negative- Characteristics	(1.5)
		Difference in Grams staining	(1)
3		Spoilage of canned foods- types	(2)
		Chemical spoilage- types-description	(3)
		Biological spoilage- types- organisms involved- description	(3)
		Scheme for diagnosis of spoilage in heated canned foods	(2)
4	a)	Factors affecting food spoilage- introduction	(1)
		Intrinsic factors- Nutrients	(1)
		p ^H and buffering capacity	(1)
		Water activity	(1)
		Redox potential	(1)
	b)	Classification	(1)
		Psychrophiles	(1)
		Mesophiles	(1)
		Thermophiles	(1)
		Temperature range of each category	(1)
PART B			
<i>Answer any threefull questions, each question carries 10 marks.</i>			
5	a)	Protozoa	(1)
		Parasites	(1)
		Viruses	(1)

		Fungi	(1)
		others	(1)
	b)	<i>C.botulinum</i> – organism characteristics	(1)
		Toxin types- seven serological distinct types-A,B,C,D,E,F,G	(2)
		Detailed description-Mode of action	(2)
6		Food borne diseases- general classification	(2)
		Food poisonings- types- Staphylococcal enterotoxigenesis	(2)
		Botulism	(2)
		Food borne infection- types- examples	(2)
		Non bacterial agents of food borne illness	(2)
7	a)	Steps :Assemble HACCP team	(1)
		Describe the product	(1)
		Identify intended use	(1)
		Construct flow diagram	(1)
		Onsite verification of flow diagram	(1)
	b)	Verification- definition	(2.5)
		Validation- definition	(2.5)
8		GMP-Definition	(2)
		Different steps-detailed description	(4)
		Hygiene principles	(2)

		Detailed description	(2)
PART C			
<i>Answer any fourfull questions, each question carries 10 marks.</i>			
9	a)	Probiotics-definition	(1)
		Modes of action- competitive exclusion	(1)
		Production of bacteriocins	(1)
		Production of organic acids	(1)
		Other possible modes of action	(1)
	b)	Immobilization of enzymes- definition-purpose	(1)
		Adsorption	(1)
		Covalent bonding	(1)
		Cross linking	(1)
		Entrapment	(1)
10		Introduction	(1)
		Liquid fermented products- sauses	(1)
		Fementation process	(2)
		Products- Nuoc-mam	(2)
		Budu	(2)
		Patis	(2)
11		Introduction	(1)
		Yeast cultures- Desirable properties of baker's yeast	(2)
		Bread manufacturing principles- Ingredients	(1)

		Steps- Hydration and Mixing	(1)
		Fermentation and biochemical reactions	(1)
		Dividing- Rounding- Panning	(1)
		Proofing	(1)
		Baking	(1)
		Cooling and packaging	(1)
12	a)	PCR-Polymerase Chain Reaction	(1)
		Denaturing	(1)
		Annealing	(1)
		Primer Extension	(1)
		Temperature for each step	(1)
	b)	ATP detection-ATP bioluminescence	(1)
		DNA/ RNA method- PCR	(1)
		Direct Epifluorescent Filter Technique (DEFT)	(1)
		Immunoassay- ELISA, Immunofluorescence	(1)
		Flow Cytometry- Biosensor type	(1)
13	a)	Invitro immunoassay procedure for <i>C.botulinum</i> toxin	(1.5)
		Protocol	(1)
		Staphylococcal enterotoxin detection	(1.5)
		Protocol	(1)
	b)	Methylene Blue Reduction Test (MBRT)	(1)

	Principle	(1.5)
	Procedure	(1)
	MBRT result chart	(1.5)
14	Immunoassay- definition	(1)
	Qualitative and quantitative immunosaay	(1)
	Homogenous immunoassay- agglutination and precipitation reactions	(4)
	Heterogenous immunoassay- ELISA, IF, Lateral flow assay, IMS	(4)
