Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III • EXAMINATION – WINTER • 2014

Subject Code: 2131407 **Date: 23-12-2014**

Subject Name: Basic Food Microbiology

Time: 02.30 pm - 05.00 pm **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Describe the difference between prokaryotes and eukaryotes.	**07**
	(b)	Describe the growth phases of bacterial growth. Why the growth curve is known as S-shaped/sigmoid curve?	**07**
Q.2	**(a)**	Justify the comment "Louis Pasteur is aptly known as Father of microbiology"	**07**
	(b)	Describe the contributions of Robert Koch. Enlist the Koch postulates which help in establishing a causative of a particular disease.	**07**
		OR	
	(b)	Describe any two tests to detect enteric bacteria. Comment on significance of such tests in food industry.	**07**
Q.3	**(a)**	Draw a diagram to depict parts of compound bright field microscope.	**07**
	(b)	Describe various methods to control microorganisms using any physical and chemical agents.	**07**
		OR	
Q.3	**(a)**	Describe how glycerol stocks are prepared in order to preserve microorganisms at low temperature. Why cryophilization is preferred to spray drying while preserving microorganisms?	**07**
	(b)	A typical bacterial cell increases from one cell to 256 cells in 10 hours. What is the generation time of this organism?	**07**
Q.4	**(a)**	What is the difference between auxotroph and bradytrophic microorganism. Draw a schematic illustration to depict replica plating for isolation of auxotrophs.	**07**
	(b)	How serological characteristics are used in ELISA? What is the role of primary and secondary antibody in ELISA. Draw a single diagram depicting steps of ELISA.	**07**
		OR	
Q.4	**(a)**	What is the difference between chromosomal and extrachromosomal DNA in bacteria? What is the term used to describe the combination of both chromosomes? Draw diagram to depict conjugative transfer of extrachromosomal DNA.	**07**
	(b)	Draw a diagram to depict a typical PCR cycle. What is the significance of Taq polymerase? Briefly describe Southern blotting technique.	**07**
Q.5	**(a)**	Describe the role of intrinsic and extrinsic parameters affecting microbial growth in foods.	**07**
	(b)	Describe different types of microbial growth media. How differential media differs from selective media. Explain using examples.	**07**
		OR	
Q.5	**(a)**	Describe the steps of gram staining. Why gram staining is also known as differential staining?	**07**
	(b)	Describe significance of probiotics and prebiotics. Name any three probiotic microorganisms.	**07**

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