Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV (New) EXAMINATION – WINTER 2015

Subject Code:2141402 **Date:06/01/2015**

Subject Name: Food and Industrial Microbiology

Time: 02:30pm to 05:00pm **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 defects in milk and milk products to justify the statement "Milk and milk products are highly perishable." Enlist the microorganisms (genus and species name) responsible for these defects in tabular format.	**07**
	(b)	Describe types of pasteurization. Describe the factors which determine the effectiveness of a particular heat treatment used for food preservation.	**07**
Q.2	**(a)**	Describe the concept and application of D and 12 D value.	**07**
	(b)	What do you understand by food borne infection by live microorganism? Describe any two examples.	**07**
		OR	
	(b)	Draw a diagram to depict the mechanism of action of AB type of microbial toxins. Give two examples of bacteria producing AB type toxin and disease caused by them.	**07**
Q.3	**(a)**	Describe spoilage of vegetables and fruits by microorganisms.	**07**
	(b)	What is lactose intolerance? Describe how Beta galactosidase enzyme can help in preparing products for lactose intolerant people.	**07**
		OR	
Q.3	**(a)**	Describe a method to isolate amylase producing microorganisms. Which reagent is used to detect the presence of starch?	**07**
	(b)	Describe the food preservation using chemicals. What role does FSSAI plays in defining such chemicals and its usage in food preservation?	**07**
Q.4	**(a)**	Draw an illustrated diagram depicting various parts of a fermenter.	**07**
	(b)	What is single cell protein? Describe its significance and production details.	**07**
		OR	
Q.4	**(a)**	Describe merits of bioethanol over gasoline. Draw a flow chart to depict the production of bioethanol.	**07**
	(b)	Draw a flowchart to indicate the production of citric acid. Enlist its properties and applications.	**07**
Q.5	**(a)**	Draw a flow chart to represent purification and recovery of proteins based on size, polarity, solubility, and binding.	**07**
	(b)	Describe the concept of purification of protein using 2-dimensionl gel electrophoresis. What is the advantage of 2-D over 1-D gel electrophoresis.	**07**
		OR	
Q.5	**(a)**	Draw a schematic graph indicating the growth phases of microorganisms. What is the difference between primary and secondary metabolite. Give example of each type of metabolite.	**07**
	(b)	A bacterial cell divides every 30 minutes. The initial no. of cells is exactly 100 bacterial cells. After 3 hours, how many bacteria are present?	**07**

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