Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV • EXAMINATION – WINTER • 2014

Subject Code: 141402 Date: 22-12-2014

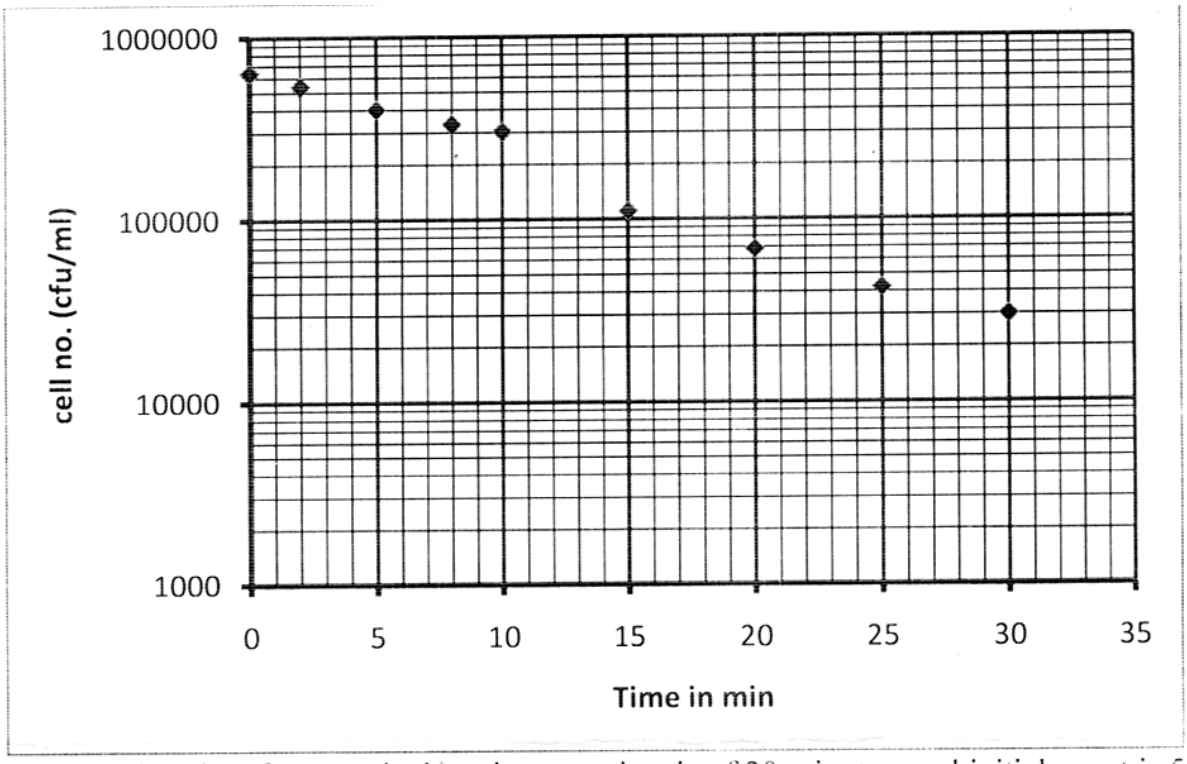
Subject Name: Food and Industrial Microbiology

Time: 02:30 pm - 05:30 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)	"Dairy products are highly perishable". Describe the types of microbial spoilage of dairy products and its causative microorganism.	07
	(b)	Describe the microbial spoilage of fruits and vegetables	07
Q.2	(a)	Discuss the microbial spoilage of canned products, both aerobic and anaerobic? What is the significance of 12D concept for packaging and processing of canned products?	07
	(b)	What do you understand by food borne infection? Describe any two examples. How does food borne infection differ from food borne intoxication?	07
		OR	
	(b)	What is lactose intolerance? Describe how Beta galactosidase enzyme can help in preparing products for lactose intolerant people.	07
Q.3	(a)	Describe the food preservation using chemicals. What role does FSSAI plays in defining such chemicals and its usage in food preservation?	07
	(b)	What is bioethanol? How it is advantageous in comparison to gasoline? Enlist substrate for bioethanol production. Describe the steps by which bioethanol is produced on large scale.	07
		OR	
Q.3	(a)	What is pasteurization? Describe types of pasteurization. Name the microorganism used as indicator of effective pasteurization.	07
	(b)	Describe an agar plating method to screen microorganisms for amylase production. Which reagent is used to visualize the zone of clearance due to amylase activity?	07
Q.4	(a)	Draw a flowchart to indicate the production of citric acid. Enlist its properties and applications.	07
	(b)	What is single cell protein? Describe its significance and production details.	07
		OR	
Q.4	(a)	Describe microbial growth phases. During which phase primary and secondary metabolite are produced? Give example of each metabolite.	07
	(b)	Draw an illustrated diagram depicting various parts of a fermenter.	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 any two techniques used for recovery and purification of fermentation product.	07
		OR	
Q.5	(a)	Calculate D value for the data depicted in figure given below	07



(b) If generation time for a particular microorganism is of 20 minutes, and initial count is 5 cells, how many cells will be there after 200 minutes? **07**

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