Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV • EXAMINATION – SUMMER 2013

Subject Code: 141402 **Date: 07-06-2013**

Subject Name: Food and Industrial Microbiology

Time: 10:30am – 01:00pm **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)** Match the Following: **06**

1) Ropy Bread	1) Prevention of sprouting
2) Soft rot in fresh fruits and vegetables	2) *Bacillus subtilis*
3) Reason for irradiating Potato, onion	3) Lipolytic Bacteria
4) Microbial rancidity in food	4) *Campylobacter jejuni*
5) Ethanol Production	5) Rhizopus/*Erwinia carotovora*
6) Gastrointestinal disorder	6) *Saccharomyces cerevisiae*

(b) Differentiate between: **08**

i. Isolation & Screening
ii. Simple media & Selective media
iii. Lactose+ bacteria & Lactose- bacteria
iv. Deep jet fermenter & Air lift fermenter

Q.2 **(a)** Explain various thermal methods for preservation of food and their mode of action on microbes. **07**

(b) Why preservation of cultures is considered to be important? Enlist any 5 preservation techniques. **07**

OR

(b) Discuss preservation of food using chemicals in detail. **07**

Q.3 **(a)** Describe with the help of a diagram about the oxygen transfer phenomena in a fermenter. **05**

(b) Write about use of sterilization of air and media in food microbiology. **02**

(c) Explain citric acid production by fermentation method detailing its recovery from fermentation broth. **07**

OR

Q.3 **(a)** Explain various intrinsic and extrinsic factors affecting spoilage of food. **06**

(b) Define the following terms: **08**

i. Pure culture
ii. OTR
iii. Microbial growth kinetics
iv. Upstream processing

Q.4 **(a)** What is downstream processing? Draw a typical flowchart that indicates various unit processes used in the downstream processing. **08**

(b) Explain spoilage of fruits and vegetables by various microorganisms. **06**

OR

Q.4 **(a)** Fill in the blanks: **07**

1) _____filters are thick fibrous filters that removes microorganisms by physical screening.
2) The time required for a microbe to double is known as _____ .
3) Lyophillisation is the other name for _____.
4) K_La is known as the _____.
5) The driving force for oxygen transfer in a fermenter is _____.
6) Sterilization of media is done by _____.
7) In continuous stirred-tank fermenter steady state conditions can be achieved by _____.

(b) Explain Canned Food spoilage by spore formers with specific microorganisms. **07**

Q.5 **(a)** Classify Food borne diseases and explain food intoxication and food infection with two microorganisms in each case. **06**

(b) Brief various steps including biochemistry for ethanol production by fermentation. **08**

OR

Q.5 **(a)** Write in detail various microorganisms associated with Milk and Milk Products and list various fermented milk products. **06**

(b) Explain in detail various methods used for the isolation of microbes. **05**

(c) Write about baker's yeast and Brewer's yeast in short **03**

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