

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER– VI• EXAMINATION – Summer 2016

Subject Code: 2161408**Date: 17/05/2016****Subject Name: Food Fermentation Technology****Time: 10:30 AM to 01:00 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) What is fermentation, its advantages and disadvantages? Draw a well labelled diagram to depict the structure of a fermenter. **07**
- (b) Draw a flowchart to depict the steps of beer production. What is the significance of hops flowers in beer composition? **07**

- Q.2** (a) Draw a diagram to illustrate the structure of Lac operon. Explain the genetic regulation of operon under the following conditions: a) Only glucose present; b) Neither glucose nor lactose present; c) both glucose and lactose present; d) Only lactose present **07**
- (b) Describe the significance of K_{La}. Describe any two methods for determination of 'K_{La}' value. **07**

OR

- (b) What is the significance of strain improvement in fermentation industry? How such strains are preserved for short term and long term storage? **07**
- Q.3** (a) Describe composition of a growth media typically used for microbial growth in fermenter. Also enlist the significance of each ingredient of growth media. **07**
- (b) Describe a protocol to screen beta galactosidase producing microorganisms. Suggest application of beta galactosidase enzyme in food industry. **07**

OR

- Q.3** (a) Describe an experiment to isolate amylase enzyme. What is the application amylase in food industry? **07**
- (b) Describe the concept of adsorption chromatography using an illustration. What are the disadvantages of adsorption chromatography? How does it differ from affinity elution chromatography. **07**

- Q.4** (a) What is the difference between batch, fed batch and continuous fermentation? **07**
- (b) What do you mean by 'Del factor'? Give mathematical derivation for it. **07**

OR

- Q.4** (a) Describe industrial method of wine production. Give examples and types of wines. **07**
- (b) Draw a diagram to depict 2-dimensional gel electrophoresis. Explain how it is better than conventional SDS-PAGE. **07**
- Q.5** (a) Give the flow diagram for preparation of wine with description of fermentation step. **07**
- (b) Describe the following methods of protein purification: a) ammonium sulphate **07**

precipitation b) differential centrifugation

OR

- Q.5** (a) Enlist any 14 fermented products alongwith the starter organism used for its preparation. **07**
- (b) Describe the process of inoculum preparation for industrial purposes. What do you understand by “Direct-vat-set” culture used in dairy industry? **07**
