

**PARUL UNIVERSITY**  
**FACULTY OF APPLIED SCIENCE**  
**B.Sc., Summer 2017-18 Examination**

**Semester: 5**  
**Subject Code: 11102301**  
**Subject Name: Industrial Biotechnology**

**Date: 24-05-2018**  
**Time: 02:00PM to 04:30PM**  
**Total Marks: 60**

**Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

- Q.1. A) Essay type (4x2) (Each of 04 marks) (08)**  
 (a) Explain different modes of preservation of microorganisms?  
 (b) Explain the basic design of a fermentor.
- Q.1. B) Answer the following questions (Any two)**  
 (a) Brief note (2x2) (Each of 02 marks) (04)  
 1. Describe air lift fermentor  
 2. List different types of fermentors  
 (b) Short note on amylase production (04)  
 (c) Short note on production of citric acid (04)
- Q.2. A) Answer the following questions.**  
 (a) Brief note (2x2) (Each of 02 marks) (04)  
 1. Brief note on structure of ideal fermentor  
 2. What is the basis of using microorganisms in manufacturing industry?  
 (b) Short note on packed bed reactor (04)
- Q.2. B) Answer the following questions (Any two)**  
 (a) Multiple choice questions. (Each of 01 marks) (03)  
 1. What is the fullform of DMSO  
 A. Di methyl sulphur oxide                      B. Di methyl sulfoxide  
 C. Di magnesium super oxide                D. Di methyl super oxide  
 2. Isolation and detection of high yielding species from the natural source material containing a heterogeneous microbial population is called  
 A. screening    B. auxanography  
 C. lyophilization                                      D. cryopreservation  
 3. Cryopreservation is  
 A. preservation at low temperature              B. preservation at high temperature  
 C. preservation at high temperature            D. preservation in mineral oil  
 (b) Short note on secondary screening in detail? (03)  
 (c) Short note on beer production (03)
- Q.3. A) Essay type (4x2) (Each of 04 marks) (08)**  
 (a) What is the difference between red wine and white wine, How wine is produced commercially?  
 (b) Describe selection and screening of micro-organisms through primary screening?
- Q.3. B) Answer the following questions (Any two)**  
 (a) Brief note (2x2) (Each of 02 marks) (04)  
 1. Explain enrichment culture technique?  
 2. Explain bubble column reactor  
 (b) Describe the production process of cheese and name the organisms used for cheese production? (04)  
 (c) Short note on biogas production (04)
- Q.4. A) Answer the following questions.**  
 (a) Brief note (2x2) (Each of 02 marks) (04)  
 1. Explain Lyophilization  
 2. Short note on control of various parameters in fermentor  
 (b) Short note on biological assay of fermentation products (04)

**Q.4. B) Answer the following questions (Any two)**

(a) Multiple choice questions (Each of 01 marks)

**(03)**

1. Brewer's Yeast is used to produce

A. beer

B. carbohydrates

C. protein

D. Biogas

2. Select the type of cheese from the option below.

A. Parmesan

B. Roquefort

C. Mozzarella

D. All the above

3. Which of the following is not included in alcoholic beverages and biofuels?

A. wine

B. beer

C. Vinegar

D. Biogas

(b) Short note on photobioreactor

**(03)**

(c) Short note on important commercial products produced by microorganisms?

**(03)**