

**QP Code : 76358**

**(3 Hours)**

**[Total Marks : 75**

- N.B. :** (1) All questions are compulsory  
(2) All questions carry equal marks  
(3) Draw neat and labeled diagrams wherever necessary

1. A. Discuss with reference to batch and continuous process, advantages, disadvantages and operating conditions. 8

B. What is role of aeration and agitation in a stirred tank reactor? 7

**OR**

1. A. Discuss design and application of an Air-lift bioreactor. 8

B. Comment on Solid state fermentation. State its advantages over submerged liquid fermentation 7

2. A. Give an account of Industrial production of Erythromycin 8

B. Describe methods for production of Lipases and give applications 7

**OR**

2. A. Discuss the industrial production of Biopolymers. Comment on their applications 8

B. Comment on amylase application and production 7

3. A. Discuss disadvantages of biofilms from the point of view of Medical microbiology. 8

B. Comment on the molecular methods used to investigate hospital infections outbreaks 7

**OR**

3. A. Discuss immunological and molecular methods used for diagnosis of viral diseases. 8

B. Describe the molecular methods for identification of fungal pathogens 7

4. A. How would you reduce the bioburden in a pharmaceutical manufacturing area? 8

B. Explain the significance of 'in-process control' and 'final product control test' in the case of toxoid production. 7

**OR**

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4. A. Explain the significance of the seed lot system with respect to vaccine Production. 8
- B. Elaborate on the QC controls on the raw materials used in manufacturing 7
5. Write short notes on any three of the following 15
- a. pH measurement and monitoring
  - b. Application of Xanthan gum
  - c. Karyotyping
  - d. Molecular diagnosis of hepatitis
  - e. Probiotics
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