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Total Number of Pages : 01

B.Tech
PBT51103

5th Semester Regular Examination 2018-19
INDUSTRIAL MICROBIOLOGY & ENZYME TECHNOLOGY

BRANCH : BIOTECH

Time : 3 Hours

Max Marks: 100

Q.CODE : E482

Answer Question No.1 (Part-1) which is compulsory, any EIGHT from Part-II and any TWO from Part-III.

The figures in the right hand margin indicate marks.

Part-I

Q1 Short Answer Type Questions (Answer All-10) (2 x 10)

- What is Koshland's model?
- What do you mean by enzyme specificity?
- What do you mean by activation energy?
- What is turnover number of the enzyme?
- What is downstream processing?
- What is combinatorial biology and what is the basic approach used in this technique?
- What are non-Newtonian broths and why are these important in fermentations?
- What is the basis for using microorganisms in a manufacturing industry?
- What is Pasteur effect?
- What is ATCC? What role does it play?

Part-II

Q2 Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve) (6 x 8)

- Can mutations be induced with chemicals or physical agents? and how mutation is useful in microbial strain improvement?
- What do you mean by SSF? Write its advantages and limitation in industrial production of biomolecules.
- How lactic acid can be produced and recovered from fermentation broth?
- What are antibiotics? Mention its general applications.
- What are the different factors affect enzyme activity?
- Write the significance of Lineweaver-Burk double reciprocal plot.
- What are the general properties of a microorganism to become an industrial strain?
- Write different mode of preservation of microbial stock culture.
- What is batch culture? Discuss microbial growth kinetics in batch.
- Bacillus polymyxa* under ideal conditions occupies 5% of the total volume of a fermentor. Under which conditions the culture medium (after bacilli are filtered) has a concentration of 1mg/ml of the secreted protein trehalose?
- What is mean by a "genetically engineered" bacterium? How is this accomplished?
- Write a short note on applications of enzymes in industry.

Part-III

Long Answer Type Questions (Answer Any Two out of Four)

Q3 What is fermentation? Write the salient feature, engineering design and advantages of different types of fermenters or bioreactors. (16)

Q4 What is enzyme immobilization? Write about different methods and advantages as well as disadvantages of each methods of enzyme immobilization. (16)

Q5 Discuss the microbiological process, product yield and recovery of acetone and butanol industrially. (16)

Q6 Discuss the production process and regulation of biosynthesis of penicillin. (16)