

(3 Hours)

[Total Marks: 80]

N.B: (1) Question No.1 is compulsory.

(2) Attempt any three questions out of remaining five questions.

(3) Draw diagrams/ figure wherever necessary.

Q.1. Write short note on followings

20

- a) Upstream vs Downstream process
- b) Submerged vs Solid state fermentation
- c) Crab tree effect
- d) Range of fermentation process

Q. 2. a) What is the basic function of fermenter? Explain in detail design of stirred tank fermenter.

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b) Explain microbial kinetics in batch culture.

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Q.3. a) Explain different components of culture media for microbial growth.

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b) Explain thermal death kinetics to achieve sterilization.

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Q.4. a) Write a note on strain improvement of industrial microorganism with special emphasis on rDNA technology.

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b) Discuss development of inocula for yeast.

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Q.5. a) What is KLa? Explain various methods for the determination of KLa.

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b) Explain different ways to preserve industrially important microorganism.

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Q.6. a) What are the different feed strategies in fed batch culture? Give detail account on variable volume fed batch culture.

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b) What is del factor? Give significance of del factor during designing of batch sterilization process.

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