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Roll No.

THIRD SEMESTER

B. Tech [BT]

SUPPLEMENTARY EXAMINATION

FEB-2019

BT 205: Chemical Engineering Principles

Time: 3:00 Hours

Max. Marks: 40

Note: Answer FIVE questions. Question No. 1 is compulsory
Assume suitable missing data if any.

Q.1 [a] What do you mean by the term EMP Pathway. [12]

[b] Explain the relation between μ and K_s .

[c] Define Nabla factor.

[d] What are the different methods of heat transfer.

[e] Why measurement of biochemical process variables are important.

[f] Why airlift reactor is better than bubble column reactor.

Q.2 [a] What do you mean by substrate utilization kinetics. [3]

[b] Explain Krebs cycle along with ATP generation involved in respiration. [4]

Q.3 [a] What do you mean by doubling time of a biomass. [3]

[b] A plasmid containing strain of *E. coli* is used to produce recombinant protein in a 250 litre fermenter. The probability of plasmid loss per generation is 0.005. The specific growth rate of plasmid free cells is 1.4 h^{-1} ; the specific growth rate of plasmid bearing cells is 1.2 h^{-1} . Estimate the fraction of plasmid bearing cells after 18 h growth if the inoculum contains only cells with plasmid. [4]

P.T.O.

Q.4 [a] Explain the different methods of media sterilization. [3]

[b] Write the differences between batch and continuous mode of sterilization. [4]

Q.5 [a] What is the difference between homogeneous and heterogeneous reaction system. [3]

[b] Explain the different types of immobilization methods. [4]

Q.6 [a] Discuss the various factors affecting oxygen mass transfer in fermentation broth. [3]

[b] How biochemical process variables are measured and control in a bioreactor. [4]

END