CLASS: BE   SEMESTER: V
BRANCH: BIOTECH   SESSION : MO/2018

SUBJECT : BT5021 BIOPROCESS ENGINEERING

TIME: 1.5 HOURS   FULL MARKS: 25

INSTRUCTIONS:
1. The total marks of the questions are 30.
2. Candidates may attempt for all 30 marks.
3. In those cases where the marks obtained exceed 25 marks, the excess will be ignored.
4. Before attempting the question paper, be sure that you have got the correct question paper.
5. The missing data, if any, may be assumed suitably.

Q1 (a) What are suitable conditions for growth of an organism in batch mode of cultivation?   [2]
    (b) Derive the equation for exponential phase for growth of microbes?   [3]

Q2 (a) Evaluate the conditions for synthesis of non-growth associated products?   [2]
    (b) Analyze the different means of transfer of heat in a bioreactor?   [3]

Q3 (a) Explain the significance of degree of reduction?   [2]
    (b) Explain the role of one factor a time (OFAT) in medium optimization?   [3]

Q4 (a) What is doubling time? Calculate the doubling time a virus with specific growth rate of [2]
         10/min?
    (b) What are the various parameters considered for designing of a bioreactor?   [3]

Q5 (a) Depict Yx/s and Yp/s?   [2]
    (b) Analyze the various properties of nonconventional reactors?   [3]

Q6 (a) Point out the applications of STBR?   [2]
    (b) Calculate the stoichiometric coefficients for following equations?   [3]
         C6H12O6+ aO$_2$ + bNH3 = c(C$_{4.4}$H$_{7.3}$O$_{1.2}$N$_{0.86}$) + dH$_2$O + eCO$_2$

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