Registration no: | | | | | | | | | | |

Total Number of Pages: 1

B.TECH
PECE5404

8th Semester Regular / Back Examination 2015-16
PROCESS SIMULATION AND MODELING
BRANCH: BIOTECH
Time: 3 Hours
Max Marks: 70
Q.CODE: W175

Answer Question No.1 which is compulsory and any five from the rest.
The figures in the right hand margin indicate marks.

Q1 Answer the following questions: **(2 x 10)**

a) What is Reynold's number?
b) What is binary distillation column.
c) Explain transport equations.
d) What is geometric programming?
e) Name a mass transfer constant.
f) Explain Single component vaporizer.
g) What is constant hold up?
h) Explain laws of process control
i) What is phase equilibrium.
j) Explain Arrhenius temperatire dependence.

Q2 a) Give a brief description of various fluids. **(5)**
b) Explain energy equation for single CSTR **(5)**

Q3 Explain continuity equation for CSTR in series. **(10)**

Q4 a) Explain mass transfer parameters of a bioreactor. **(5)**
b) What are convergence methods? **(5)**

Q5 a) Explain stability of the process with proper explanation of relationship between output- times. **(5)**
b) Explain process controllers. **(5)**

Q6 a) Draw feedback and feed forward controlled loop with proper description. **(5)**
b) Differentiate between manipulated, controlled and uncontrolled variables. **(5)**

Q7 a) Explain single variable optimization **(5)**
b) Differentiate between Lumped and distributed parameter models. **(5)**

Q8 **Write Short Notes** **(2.5 x 4)**

a) Equations of state
b) linear programming
c) Wegstein's method
d) Fibonacci