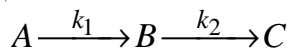


CM-804 (GS)
B.E. VIII Semester Examination, June 2020
Grading System (GS)
Chemical Process Modeling and Simulation
Time : Three Hours

Maximum Marks : 70

- Note:** i) Attempt any five questions.
 ii) All questions carry equal marks.

- Discuss advantages, limitations and applications of modeling in chemical industries.
- Derive modeling equations for a batch reactor considering the following consecutive exothermic reactions.



Where both $A \rightarrow B$ and $B \rightarrow C$ have first order kinetics.

- Compare and contrast the modeling process with the software life cycle. Analysis, design implementation, testing, documentation and maintenance.
- Write the component continuity equations and develop a mathematical model for the CSTR with first order isothermal
 - Reversible
 - Consecutive
 - Simultaneous reactions
 State all the assumptions made and explain the notations scheme used clearly.

- Explain the sequential modular approach for model.

OR

Compare the method of averages and the method of linear least squares.

- State and explain graphical interpretation of false position method. Find an approximate root at $x \log_{10} x - 1.2 = 0$ by false position method.
 - Use the least square method to determine the equation of line of best fit for the data. Then plot the line.

x	8	2	11	6	5	4	12	9	6	1
y	3	10	3	6	8	12	1	4	9	14

- Write down various types of data regression method and explain with suitable example.
- Write a short note on any two of the following:
 - Modeling of reactors
 - Simulation of absorber
 - Sources of model equations
