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# Scheme-3 Reactor-1

Part-1, Case-2

$t_a = 600 \text{ sec}$ ,  $t_m = 600 \text{ sec}$   
 $k_1 = 100$ ,  $k_2 = 10$

$NB_t/NA_t = 1.9503$

Exponent  $a = 1$   
Exponent  $b = 1$   
Exponent  $c = 0.5$   
Exponent  $d = 1.5$

$WA = 200$   
 $WB = 97.5151$   
 $NB_t = 5.20081$   
 $V_t = 2.14876$   
 $V_{at} = 1.04876$   
Tot.Solv. = 2  
 $SolA/(SolR+SolA) = 0.5$

$NA_0 = 2.66667$   
 $NB_0 = 0$

Total input = 297.515 kg  
Total output = 297.518 kg

Chemical Balance Error = 0.00256239 kg (% 8.61264e-06)

Solver: Explicit Runge-Kutta (4,5) Variable step (Dormand-Prince Pair)  
Error tolerance: 0.1%

Final Concentrations with Step Size limited to 0.0001

$NA \text{ (final)} = 0.0267578$   
 $NB \text{ (final)} = 9.96995e-12$   
 $NR \text{ (final)} = 0.0790116$   
 $NS \text{ (final)} = 2.5609$

Final Concentrations with Step Size limited to 0.001

$NA \text{ (final)} = 0.0267573$   
 $NB \text{ (final)} = 1.00499e-09$   
 $NR \text{ (final)} = 0.079012$   
 $NS \text{ (final)} = 2.5609$



