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# Scheme-3 Reactor-1

Part-3, Case-1

$t_a = 900 \text{ sec}$ ,  $t_m = 1200 \text{ sec}$   
 $k_1 = 0.1$ ,  $k_2 = 0.002$

$NB_t/NA_t = 1.25139$

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

$WA = 200$   
 $WB = 62.5697$   
 $NB_t = 3.33705$   
 $V_t = 2.13128$   
 $V_{at} = 1.03128$   
 $Tot.Solv. = 2$   
 $SolA/(SolR+SolA) = 0.5$

$NA_0 = 2.66667$   
 $NB_0 = 0$

Total input = 262.57 kg  
Total output = 262.57 kg

Chemical Balance Error = 0.000703397 kg (% 2.6789e-06)

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

Final Concentrations with Step Size limited to 0.001

$NA \text{ (final)} = 0.0266753$   
 $NB \text{ (final)} = 6.072e-13$   
 $NR \text{ (final)} = 1.94293$   
 $NS \text{ (final)} = 0.69706$

Final Concentrations with Step Size limited to 0.01

$NA \text{ (final)} = 0.0266747$   
 $NB \text{ (final)} = 6.07263e-11$   
 $NR \text{ (final)} = 1.94293$   
 $NS \text{ (final)} = 0.697063$



