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# Scheme-6 Reactor-1

Part-2, Case-1

$t_a = 900 \text{ sec}$ ,  $t_m = 1200 \text{ sec}$   
 $k_1 = 0.1$ ,  $k_2 = 0.01$

$NB_t/NA_t = 1.12387$

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

$WA = 200$   
 $WB = 56.1934$   
 $NB_t = 2.99698$   
 $V_t = 2.1281$   
 $V_{at} = 1.0281$   
Tot.Solv. = 2  
 $SolA/(SolR+SolA) = 0.5$

$NA_0 = 2.66667$   
 $NB_0 = 0$

Total input = 256.193 kg  
Total output = 256.194 kg

Chemical Balance Error = 0.000407006 kg (% 1.58867e-06)

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

Final Concentrations with Step Size limited to 0.01

$NA \text{ (final)} = 0.0266936$   
 $NB \text{ (final)} = 0.00691503$   
 $NR \text{ (final)} = 2.28988$   
 $NS \text{ (final)} = 0.350097$

Final Concentrations with Step Size limited to 0.1

$NA \text{ (final)} = 0.0266713$   
 $NB \text{ (final)} = 0.00691709$   
 $NR \text{ (final)} = 2.28988$   
 $NS \text{ (final)} = 0.350117$



