

[A3] 熱収支式

$$(a) Q = \underline{C_{pA} F_A (250 - 25)}$$

$$(b) Q = \underline{C_{pC} F_C (800 - T)}$$

$$(c) M = 28 \times 0.8 + 32 \times 0.2 = \underline{28.8 \text{ g/mol}}$$

$$(d) C_{pA} = 1.02 \text{ J/g}\cdot\text{K} = 1.02 \text{ J/g}\cdot\text{K} \times 28.8 \text{ g/mol} = \underline{29.4 \text{ J/mol}\cdot\text{K}}$$

(e) 量論(比)

$\times 9 = \text{O}_2$  の 2 倍の酸素が必要

$\rightarrow 50\%$  過剰 =  $\times 9 = \text{O}_2$  の 3 倍の  $\text{O}_2$  が必要

=  $\times 9 = \frac{3}{0.2}$  倍の空気が必要  
 11  
15

(f) 反応式より、 $\text{C}_x$  の変化より、

つまり 供給  $\left[ \begin{array}{c} 5 + 1 \\ \text{C}_x \end{array} \right] \rightarrow \text{燃焼後} \underline{16}$

(g)  $\therefore F_A = 15 F_{\text{CH}_4}$ ,  $F_C = 16 F_{\text{CH}_4}$  より

$$C_{pA} F_A (250 - 25) = C_{pC} F_C (800 - T) \quad \text{より}$$

$$29.4 \times 15 \times (250 - 25) = 35 \times 16 \times (800 - T)$$

$$\therefore T = \underline{622.8 \text{ K}}$$