$2CO(g) + O_2(g) \to 2CO_2(g)$, $\Delta H=-566kj$

۱۸٫۲۵

نام و نام خانوادگی .شیلا معالی.......... پاسخنامه تشریحی تکلیف شماره .۲۳... کلاس ....

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$n^a = m \quad (mn)^b = m^2 n \to (n^a n)^b = n^{2a} n \to n^{b(a+1)} = n^{2a+1}$

$2a+1 = \overbrace{ba+b}^{b(a+1)} \to b = \frac{2a+1}{a+1} \to \frac{2(a+1)-1}{a+1} = 2 - \frac{1}{a+1} \to a>0 \to a+1>1$

$0 < \frac{1}{a+1} < 1 \to 1 < b < 2 \to [b] = 1$

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$2\log_9 a + \log_a \sqrt{9} = 2 \to 2\log_{3^2} a + \log_a 3 = 2 \to \frac{1}{\frac{2}{2}\log_a 3} + \log_a 3 = 2$

$\log_a 3 = t \to \frac{1}{t} + t \to \frac{1}{t} + t = 2 \quad t = 1$

$\log_a 3 = 1 \to a = 3$

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الف) $\frac{x}{\log_{1/2} x} \geq 0 \quad \log_{1/2} x \neq 0 \to \log_{1/2} 1 = 0 \Rightarrow x \neq 1$

$x > 0$

$0<x<1 \quad \log_{1/2} x > 0 \quad \frac{+}{+} = + \checkmark$

$x>1 \quad \log_{1/2} x < 0 \quad \frac{+}{-} = - \times$

$\Rightarrow 0 < x < 1$

ب) $x^2 - x - 2 > 0$

$(x-2)(x+1) > 0 \quad -1, +2$

$+ \quad -1 \quad - \quad +2 \quad +$

$x>2, \ x<-1$ ①

$x^2 - 1 \geq 0$

$x^2 \geq 1 \Rightarrow |x| \geq 1$

$x \geq 1$ و $x \leq -1$ ②

① ∩ ② $= (-\infty, -1) \cup (2, +\infty)$

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$\log 5 = \log \frac{10}{2} = \log 10 - \log 2 = 1 - \log 2 = 0.7$

$\log \frac{5}{3} = \log 5 - \log 3 = 0.7 - 0.4 = 0.3$

$\log 9 = \log 3^2 = 2\log 3 = 0.8$

$\log 15 = \log 3\times 5 = \log 3 + \log 5 = 0.4 + 0.7 = 1.1$

$\to 0.3x^2 + 0.8x - 1.1 = 0 \quad \Delta = (0.8)^2 - 4(0.3)(-1.1) = 1.96$

تفاضل ریشه ها $= \frac{\sqrt{\Delta}}{|a|} = \frac{\sqrt{1.96}}{0.3} = \frac{1.4}{0.3} = \frac{14}{3}$

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$\log_2 7 \to \log_2 \frac{14}{2} = \log_2 14 - \log_2 2 = 2.8 \quad \log_2 14 = 3.8$

$\log_2 10 \to \log_2 5 + \log_2 2 = 3 \quad (\log_2 5 = \frac{1}{\log_5 2})$

$+1$

$\log_{14} 10 = \frac{\log_2 10}{\log_2 14} = \frac{3}{3.8} = \frac{15}{19}$

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$1/4$ $10/25$ $\log_5 3 = 1.5$ $\frac{1}{\log_3 2} = 1.6$ $\log_{15} 6 = \log_{15} 2 + \log_{15} 3 = \frac{40+25}{100} = \frac{65}{100}$ $\frac{\log_2 5}{\log_2 3 \; 1.6} = 1.5$ $\log_2 5 = 2.4$ $\log_{15} 2 = 1/4$ $\frac{\log_3 5}{\log_3 2} = 1.5$ $\log_2 3 + \log_2 5 \to \log_2 15$ $\log_3 5 + \log_3 3 = \log_3 15$ $1.6 + 2.4 = 4 = \log_2 15$ $1.5 + 1 = 2.5$ ۱) $\log_{15} 3 = 10/25$	۶
$\log_{2^3} 2^2 \times 3 \to \log_{2^3} 2^2 + \log_{2^3} 3 \to \frac{1}{3}\log_2 2 + \frac{2}{3}\log_2 3 \to \frac{1}{3} + \frac{2}{3}\log_2 3 = m$ $\frac{2}{3}\log_2 3 = m - \frac{1}{3}$ $\log_2 3 = (m - \frac{1}{3}) \times \frac{3}{2}$ $\log_2 3 = (m - \frac{1}{3})\frac{3}{2}$ ۲) $\frac{3}{2}m - \frac{1}{2}$ جایگذاری $\Rightarrow \frac{1}{2}(\frac{3}{2}m - \frac{1}{2}) + 1 \Rightarrow \frac{3}{4}m - \frac{1}{4} + \frac{4}{4} = \frac{3}{4}m + \frac{3}{4} \to \frac{3}{4}(m+1)$ $\log_4 12 = \frac{3}{4}(\log_8 12 + 1) = \log_4 12 \to \frac{3}{4}(m+1)$	۷
$(\frac{2}{5})^{2x-1} \to (\frac{5}{2})^{1-2x} = (\frac{125}{8})^{x^2} \to (\frac{5}{2})^{1-2x} = (\frac{5}{2})^{3x^2} \to 1-2x = 3x^2$ $3x^2 + 2x - 1 = 0 \to x^2 + 4x - 3 = 0 \to (x-1)(x+3) = 0$ غ ق ق $\frac{1}{3}$ $\log_8 4 \to \log_{2^3} 2^2 \to \frac{2}{3}\log_2 2 \Rightarrow \log_2 2 = 1 = \frac{2}{3}$ ۲)	۸
$2^a = 3$, $8^{\frac{2}{3}+\frac{2}{3}a} = b \Rightarrow 2^{2a+2} = b \to 2^2 \times (2^a)^2 = b$ $b = 4 \times 9 = 36$ $\log 4(36-11) = \log(100) = 2$ ۱)	۹
$\frac{b+c}{2} = a \to \frac{1}{\alpha+\beta} = \log 4 \Rightarrow \frac{1}{S} = \log \xrightarrow{\frac{4b}{a} = S} \frac{b}{4a} = \log 4$ $2a = b + c$ $2(b+c) = \frac{b+c}{2} \times 4 = 4a$ $\log 4 = \frac{b}{(b+c)\times 2}$ $\log 4 = 2\log 2 \simeq 0.301 \times 2 = 0.602 \Rightarrow 0.602 = \frac{b}{(b+c)\times 2}$ ۲٫۵)	۱۰

$$a=\frac{b+c}{2}\rightarrow b=2a-c\rightarrow \frac{1}{x_1+x_2}=\frac{1}{S}=\frac{4a}{b}=\frac{4a}{2a-c}=2\log^{2}$$

$$\rightarrow \frac{2a}{2a-c}=\log^{2}\xrightarrow{\text{عکس}}\frac{2a-c}{2a}=\log_{2}^{10}\rightarrow 1-\log_{2}^{10}=\frac{c}{2a}\rightarrow 2-\log_{2}^{100}=\frac{c}{a}\quad (1)$$

$$\left(\frac{1}{\sqrt[8]{2}}\right)^{\frac{c}{a}}=\left(2^{-\frac{1}{8}}\right)^{\frac{c}{a}}=\left(2^{\frac{c}{a}}\right)^{-\frac{1}{8}}\xrightarrow{(1)}\left(2^{2-\log_{2}^{100}}\right)^{-\frac{1}{8}}$$

$$\left(\frac{2^{2}}{2^{\log_{2}^{100}}}\right)^{-\frac{1}{8}}=\left(\frac{4}{100}\right)^{-\frac{1}{8}}=(25)^{\frac{1}{8}}=\sqrt[4]{5}$$