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

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

$n^a = m \quad (mn)^b = m^2 n \rightarrow (n^a n)^b = n^{2a} n \rightarrow n^{b(a+1)} = n^{2a+1}$ $2a+1 = b(a+1) = ba+b \rightarrow b = \frac{2a+1}{a+1} \rightarrow \frac{2(a+1)-1}{a+1} = 2 - \frac{1}{a+1} \rightarrow a>0 \rightarrow a+1>1$ $0 < \frac{1}{a+1} < 1 \rightarrow 1 < b < 2 \rightarrow [b] = 1$	۱
$2\log_9 a + \log_{\sqrt{9}} a = 2 \rightarrow 2\log_{3^2} a + \log_3 a = 2 \rightarrow \frac{1}{\frac{2}{2}\log_a 3} + \log_a 3 = 2$ $\log_a 3 = t \rightarrow \frac{1}{t} + t \rightarrow \frac{1}{t} + t = 2 \quad t=1$ $\log_a 3 = 1 \rightarrow a = 3$	۲
الف) $\frac{x}{\log_{\frac{1}{2}} x} \geq 0 \quad \log_{\frac{1}{2}} x \neq 0 \rightarrow \log_{\frac{1}{2}} 1 = 0 \Rightarrow x \neq 1$ $x > 0$ $0 < x < 1 \quad \log_{\frac{1}{2}} x > 0 \quad \frac{+}{+} = + \ \checkmark$ $x > 1 \quad \log_{\frac{1}{2}} x < 0 \quad \frac{+}{-} = - \ \times$ $\Rightarrow 0 < x < 1$ ب) $x^2 - x - 2 > 0$ $(x-2)(x+1) > 0 \quad -1, +2$ $+ \ -1 \ - \ +2 \ +$ $\quad x > 2, \ x < -1$ ① $x^2 - 1 \geq 0$ $x^2 \geq 1 \Rightarrow \lvert x \rvert \geq 1$ $x \geq 1$ و $x \leq -1$ ② $① \cap ② = (-\infty, -1) \cup (2, +\infty)$	۳
$\log 5 = \log \frac{10}{2} = \log 10 - \log 2 = 1 - \log 2 = 0/7$ $\log \frac{5}{3} = \log 5 - \log 3 = 0/7 - 0/4 = 0/3$ $\log 9 = \log 3^2 = 2\log 3 = 0/8$ $\log 15 = \log 3 \times 5 = \log 3 + \log 5 = 0/4 + 0/7 = 1/1$ ب) $0/3 x^2 + 0/8 x - 1/1 = 0 \qquad \Delta = (0/8)^2 - 4(0/3)(-1/1) = 1/96$ تفاضل ریشه ها $= \frac{\sqrt{\Delta}}{\lvert a \rvert} = \frac{\sqrt{1/96}}{0/3} = \frac{1/4}{0/3} = \frac{14}{3}$	۴
$\log_2 7 \rightarrow \log_2 \frac{14}{2} - \log_2 14 - \log_2 2 = 2/8 \qquad \log_2 14 = 3/8$ $\log_2 10 \rightarrow \log_2 \frac{5}{2} + \log_2 2 = 3 \quad (\log_2 5 = \frac{1}{\log_5 2})$ $+1$ $\log_{14} 10 = \frac{\log_2 10}{\log_2 14} = \frac{3}{3/8} = \frac{15}{19}$	۵

$\log_5^3 = ۱/۵$ $\frac{1}{\log_3^2} = ۱/۶$ $\log_{15}^6 = \log_{15}^2 + \log_{15}^3 = \frac{۴۰+۲۵}{۱۰۰} = \frac{۶۵}{۱۰۰}$ (۱/۴ , ۱۰/۲۵) $\frac{\log_3^5}{\log_3^2} = ۱/۵$ $\log_2^5 = ۲/۴$ $\log_{15}^2 = ۱/۴$ $\frac{\log_3^5}{\log_3^3} = ۱/۵$ $\log_2^3 + \log_2^5 \rightarrow \log_2^{15}$ $\log_3^5 + \log_3^3 = \log_3^{15}$ $\log_{15}^3 = ۱۰/۲۵$ $۱/۶ + ۲/۴ = ۴ = \log_2^{15}$ $۱/۵ + ۱ = ۲/۵$	۶
$\log_{2^2}^{3^2 \times 2} \rightarrow \log_{2^3}^{2} + \log_{2^3}^{3^3} \rightarrow \frac{1}{3}\log_2^2 + \frac{3}{3}\log_2^3 \rightarrow \frac{1}{3} + \frac{2}{3}\log_2^3 = m$ $\frac{2}{3}\log_2^3 = m - \frac{1}{3}$ $\log_2^3 = (m - \frac{1}{3}) \times \frac{3}{2}$ $\log_2^3 = (m-\frac{1}{3})\frac{3}{2} \rightarrow \frac{3}{2}m - \frac{1}{2}$ جایگذاری $\Rightarrow \frac{1}{2}(\frac{3}{2}m - \frac{1}{2}) + 1 \Rightarrow \frac{3}{4}m - \frac{1}{4} + \frac{4}{4} = \frac{3}{4}m + \frac{3}{4} \rightarrow \frac{3}{4}(m+1)$ $\log_4^{12} = \frac{3}{4}(\log_8^{18} + 1) = \log_4^{12} \rightarrow \frac{3}{4}(m+1)$	۷
$(\frac{2}{5})^{2x-1} \rightarrow (\frac{5}{2})^{1-2x} = (\frac{125}{8})^{x^2} \rightarrow (\frac{5}{2})^{1-2x} = (\frac{5}{2})^{3x^2} \rightarrow 1-2x = 3x^2$ $3x^2 + 2x - 1 = 0 \rightarrow x^2 + 4x - 3 = 0 \rightarrow (x-1)(x+3) = 0$ ← 1 غ ق ق ، $\frac{1}{3}$ $\log_8^4 \rightarrow \log_{2^3}^{2^2} \rightarrow \frac{2}{3}\log_2^2 \Rightarrow \log_2^2 = 1 = \frac{2}{3}$	۸
$3^a = 3$ ، $8^{\frac{2}{3}+\frac{2}{3a}} = b \Rightarrow 2^{2a+2} = b \rightarrow 2^2 \times (2^a)^a = b$ $b = 4 \times 9 = 36$ $\log 4(36 - 8) = \log(100) = 2$	۹
$\frac{b+c}{2} = a \rightarrow \frac{1}{\alpha+\beta} = \log 4 \rightarrow \frac{1}{S} = \log \frac{4b}{a} = S \rightarrow \frac{b}{4a} = \log 4$ $2a = b+c$ $2(b+c) = \frac{b+c}{2} \times 4 = 4a$ $\log 4 = \frac{b}{(b+c)\times 2}$ $\log^{2^2} = 2\log 2 \simeq 0/301 \times 2 = 0/602 \Rightarrow$ $0/602 = \frac{b}{(b+c)\times 2}$	۱۰