

2024年度 学部一般入試(化学)【解答例】

【1】

(1)	②
(2)	②・④・⑤
(3)	④・⑤
(4)	⑤
(5)	①・②・⑤
(6)	②

【2】

(1)	$\text{Fe}_2\text{O}_3 + 3\text{CO} \rightarrow 2\text{Fe} + 3\text{CO}_2$ $\text{Fe}_3\text{O}_4 + 4\text{CO} \rightarrow 3\text{FeO} + 4\text{CO}_2$
(2)	$1.05 \times 10^2 \text{ mol}$
(3)	3:5
(4)	$2.87 \times 10^{-8} \text{ cm}$ ($2.86 \times 10^{-8} \text{ cm}$ も可)
(5)	8.0 g/cm^3 (7.9 g/cm^3 も可)
(6)	④
(7)	$3.7 \times 10^{-2} \text{ mol}$

【3】

(1)	$x:4 \quad y:5 \quad z:2$
(2)	黒鉛の燃焼熱は396 kJ/mol 水素の燃焼熱は286 kJ/mol プロパンの生成熱は112 kJ/mol
(3)	3:5
(4)	$8.8 \times 10^2 \text{ L}$
(5)	$\text{pH} = -\frac{1}{2} \log_{10} cK_a \left(= -\frac{1}{2} (\log_{10} c + \log_{10} K_a) \right)$
(6)	$1.5 \times 10^{-4} \text{ mol/L}$

【4】

(1)	(A) $\text{CH}_3\text{—CH}_2\text{—OH}$	(B) $\text{CH}_2\text{=CH—OH}$	
	(C) $\begin{array}{c} \text{CH}_3\text{—C—H} \\ \parallel \\ \text{O} \end{array}$	(D) $\begin{array}{c} \text{CH}_3\text{—CH—CH}_3 \\ \\ \text{OH} \end{array}$	
	(E) $\text{CH}_3\text{—CH}_2\text{—CH}_2\text{—OH}$	(F) $\begin{array}{c} \text{CH}_3\text{—CH}_2\text{—C—OH} \\ \parallel \\ \text{O} \end{array}$	
(2)	$\begin{array}{c} \text{H} & & \text{CH}_2\text{—CH}_3 \\ & \diagdown & / \\ & \text{C}=\text{C} & \\ & / & \diagdown \\ \text{H} & & \text{H} \end{array}$	$\begin{array}{c} \text{H}_3\text{C} & & \text{CH}_3 \\ & \diagdown & / \\ & \text{C}=\text{C} & \\ & / & \diagdown \\ \text{H} & & \text{H} \end{array}$	$\begin{array}{c} \text{H}_3\text{C} & & \text{H} \\ & \diagdown & / \\ & \text{C}=\text{C} & \\ & / & \diagdown \\ \text{H} & & \text{CH}_3 \end{array}$
	$\begin{array}{c} \text{H} & & \text{CH}_3 \\ & \diagdown & / \\ & \text{C}=\text{C} & \\ & / & \diagdown \\ \text{H} & & \text{CH}_3 \end{array}$	$\begin{array}{c} \text{CH}_2\text{—CH}_2 \\ & \\ \text{CH}_2\text{—CH}_2 \end{array}$	$\begin{array}{c} \text{CH}_2 \\ / & \backslash \\ \text{CH}_2\text{—} & \text{CH—CH}_3 \end{array}$
(3)	5 種類		
(4)	⑤・⑥		
(5)	⑤		