

(物理化学B)

一、选择题 (共 20 题 每小题 3 分, 共 60 分)

1. (A) 2. 3. 4. (C) 5.
6. 7. 8. 9. (B) 10.
11. 12. 13. 14. 15.
16. (C) 17. 18. 19. 20.

二、计算题 (共 80 分, 每题 10 分)

1.

解: (1) $Zn(s) + 2 AgCl(s) = 2 Ag(s) + ZnCl_2$ (1 分)

(2) $\Delta_r G_m^\ominus = -ZFE = -195.9 \text{ kJ}\cdot\text{mol}^{-1}$

$\Delta_r S_m^\ominus = ZF(\partial E/\partial T)_r = -94.96 \text{ J}\cdot\text{K}^{-1}\cdot\text{mol}^{-1}$

$\Delta_r H_m^\ominus = \Delta_r G_m^\ominus + T\Delta_r S_m^\ominus = -224.2 \text{ kJ}\cdot\text{mol}^{-1}$

$\Delta_r U_m^\ominus = \Delta_r H_m^\ominus - \Delta(PV) = \Delta_r H_m^\ominus = -224.2 \text{ kJ}\cdot\text{mol}^{-1}$

$Q_r = T\Delta_r S_m^\ominus = -28.30 \text{ kJ}\cdot\text{mol}^{-1}$ (5 分)

(3) $Q_r = \Delta_r U_m^\ominus + W = \Delta_r U_m^\ominus = -224.2 \text{ kJ}\cdot\text{mol}^{-1}$ (1 分)

(4) $Q_r = \Delta_r U_m^\ominus + W_r = \Delta_r U_m^\ominus + ZFE = -69.8 \text{ kJ}\cdot\text{mol}^{-1}$ (1 分)

其他热力学变化值同上