

系所組別： 口腔醫學研究所丙組

考試科目： 普通化學

考試日期： 0226 · 節次： 3

1. Describe and explain (a) Critical mass, (b) Dipole-dipole force, (c) Fuel cell, (d) Ideal solution, (e) Nernst equation, (f) Ostwald process, (g) Salt bridge, (h) Spontaneous process, (i) Uncertainty principle, (j) Titration. (30%)
2. How much heat is released hwn a mixture containing 10.0 g NH_3 and 20.0 g O_2 reacts by the equation: $4\text{NH}_3(\text{g}) + 5\text{O}_2(\text{g}) \rightarrow 4\text{NO} + 6\text{H}_2\text{O}(\text{g}) \quad \Delta H^\circ = -906 \text{ kJ}$
(atomic weight: H = 1, N = 14, O = 16) (10%)
3. At what speed must an electron travel to have a wavelength of 10.0 pm? (10%)
4. Describe and explain the photoelectric effect. (10%)
5. Write electron-dot formulas for the following: (a) SeOCl_2 , (b) CSe_2 , (c) GaCl_4^- , (d) C_2^{2-} . (8%)
6. Write Lewis formulas for the following: (a) SbCl_3 , (b) ICN , (c) ICl_3 , (d) IF_5 . (8%)
7. Give the type of colloid (aerosol, foam, emulsion, sol or gel) that each of the following represents. (a) rain cloud, (b) milk of magnesia, (c) soapsuds, (d) silt in water. (8%)
8. Compare the activation energy in the uncatalyzed and catalyzed decomposition of ozone. (8%)
9. How do the pressure and temperature effect on chemical equilibrium? (8%)