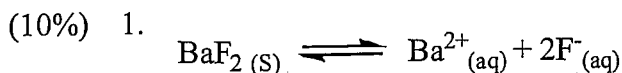


國立中山大學100學年度碩士班招生考試試題

科目：分析化學【海資系碩士班丁組】

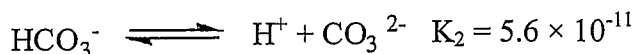
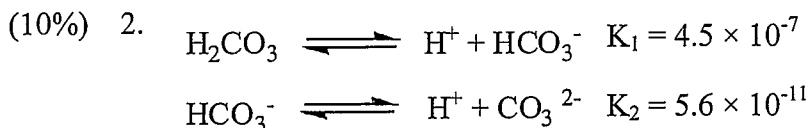
請注意：考題中若涉及計算，請將演算過程列出，否則不予計分。



The value of the solubility product, K_{sp} , for the reaction above is 4.0×10^{-6} at 25°C .

(a) Write the K_{sp} expression for BaF_2 .

(b) What is the concentration of F^{-} ions in a saturated solution of BaF_2 at 25°C ?



The acid dissociation constants for the reactions above are given at 25°C .

(a) What is the pH of a 0.050 M solution of H_2CO_3 at 25°C ?

(b) What is the concentration of CO_3^{2-} ions in the solution in (a)?

(10%) 3. Which is more accurate, a transfer pipet or measuring pipet? Explain your answer.

(10%) 4. Calculate the ionic strength of (a) 0.008 M KOH (b) 0.0002 M $\text{La}(\text{IO}_3)_3$ (assuming complete dissociation at this low concentration).

(10%) 5. Sketch the general appearance of the curve for the titration of a weak diprotic acid with NaOH. Explain in words what chemistry governs the pH in each distinct region of the curve.

(10%) 6. What is the difference between E and E° for a redox reaction? Which one runs down to 0 when the complete cell comes to equilibrium?

(10%) 7. What is a Clark (oxygen) electrode and how does it work?

(10%) 8. What is the difference between a single-beam and double-beam spectrophotometer? What are the advantages of the double-beam instrument?

(5%) 9. Why is high pressure needed in HPLC?

(15%) 10. To which kinds of analytes do the following gas chromatography detectors respond?

(a) thermal conductivity

(b) flame ionization

(c) electron capture