淡江大學 108 學年度日間部轉學生招生考試試題

系別： 水資源及環境工程學系
環境工程組三年級

科目：環境化學

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A. Multiple Choice Questions (8 point/question)

1. Which of the following oxidant is used for the analysis of chemical oxygen demand (COD)? (A) Oxygen (B) dichromate (C) ferrous ammonium sulfate (D) Mercuric sulfate.

2. What is the equivalent weight of oxygen when oxygen is involved in a redox reaction? (A) 32 (B) 16 (C) 8 (D) 4

3. A 20-mL of pH 4 sample was mixed with a 30-mL of pH 3 sample. What is the pH of the mixed solution? (A) 4 (B) 3 (C) 3.4 (D) Not enough information to decide.

4. What is the definition of Total Kjeldahl nitrogen (TKN)? (A) Organic Nitrogen +Nitrate Nitrogen + Nitrite Nitrogen (B) Nitrate Nitrogen + Nitrite Nitrogen (C) Organic Nitrogen + Ammonium Nitrogen (D) Nitrate Nitrogen + Nitrite Nitrogen + Ammonium Nitrogen

5. In the colorimetric analysis, a sample has the absorbance of 2. What is the transmittance? (A) 1% (B) 2% (C) 3% (D) 4%.

B. Computational Questions.

1. A solution containing 10^{-3} mol/L of Na_2CO_3 in deionize water was prepared. Assume it is an idea solution and has not contact with air. What is the equilibrium pH? (pKa1 = 6.35; pKa2 = 10.33) (30%)

2. A water sample with total CO_3 of 10^{-3} M and pH of 10.33. What's the Alkalinity of the sample (in mg/L $CaCO_3$)? (15%)

3. A sample was prepared by adding 20 g of $C_6H_{12}O_6$ in 0.5 L of water. What is the theoretic oxygen demand (TOD) of the sample? (15%)