

國立成功大學

114學年度碩士班招生考試試題

編 號：201

系 所：環境醫學研究所

科 目：環境化學

日 期：0211

節 次：第 3 節

注 意：1.不可使用計算機
2.請於答案卷(卡)作答，於
試題上作答，不予計分。

1. Please use reactive equation and methane as example to interpret the role of hydrocarbons in the photochemical smog (10%) and the productive mechanism of PAN (Peroxyacetyl nitrate) (10%)
2. Ozone depletion (OD) is originated from the chemical destruction of the stratospheric ozone layer beyond natural reactions where stratospheric ozone is constantly being created and destroyed through natural cycles. OD had become an important issue globally. Please answer the following questions related to OD.
 - a. Please explain why we care about the OD? (5%)
 - b. How does ozone depletion occur (specific reaction mechanism is preferred)? (9%)
 - c. How do we know that natural sources are not responsible for ozone depletion? (3%)
 - d. Will the ozone layer recover? Can we make more ozone to fill in the hole? (3%)
3. The incineration becomes a principal method for treatment of municipal solid waste in Taiwan. Please use reactive equation to describe the formation mechanisms of dioxins during the combustion of municipal solid waste. (15%)
4. What evidences had been stemmed to confirm that iron and manganese gain entrance to water supplies through changes produced in environmental conditions as results of biological reactions? (15%)
5. Balance the following equations: (20%, 4% for each)
 1. Oxidation of I^- to I_2 and reduction of MnO_2 to Mn^{2+}
 2. Oxidation of $S_2O_3^{2-}$ to SO_4^{2-} and reduction of Cl_2 to Cl^-
 3. Oxidation of NH_4^+ to NO_3^- and reduction of O_2 to H_2O
 4. Oxidation of CH_3COO^- to CO_2 and reduction of $Cr_2O_7^{2-}$ to Cr^{3+}
 5. Oxidation of $C_6H_{12}O_6$ to CO_2 and reduction of NO_3^- to N_2
6. Please draw a figure to describe the stratification of a lake and discuss how thermal stratification of a body of water may affect its chemistry (10%)