

臺北醫學大學九十學年度研究所博士班招生考試題目卷

九十學年度博士班

藥學研究所

儀器分析

考試時間：90分鐘

題目試卷共 / 張，本試卷為第 / 張

1. Take two examples of physico-chemical or biochemical methods for detecting free radicals. 20%
2. Describe the differences between fluorescence and phosphorescence. 10%
3. Give some examples of surface-coated layers of TLC and explain their application. 15%
4. Illustrate the following terms: 25%
 - a. flash chromatography
 - b. silica gel GF₂₅₄
 - c. supercritical fluid extraction
 - d. LC/MS/MS
5. Describe the main reasons for derivatisation of samples in gas chromatography. 10%
6. A novel alkaloid (C₁₁H₉NO₃) from cigarette smoke condensate is a pyridine type alkaloid, obtained as yellowish plates, provided the following data:
IR $\nu_{\max}$ (KBr) cm⁻¹: 3190, 1670, 1580.
UV $\lambda_{\max}$ (in MeOH): 333 (ϵ 5530), 216 (ϵ 25673).
 δ ¹H (Int, mul, J): 8.76 (1H, s), 8.49 (1H, d, 5.4), 8.22 (1H, d, 7.9), 8.06 (1H, dd, 7.9, 5.4), 7.12 (1H, s), 7.11 (1H, d, 8.7), 6.98 (1H, d, 8.7).
 δ ¹³C (mul): 159.6 (s), 151.7(s), 143.7 (s), 137.0 (d), 135.5 (d), 133.6 (d), 131.4 (s), 128.8 (d), 120.2 (d), 119.3 (d), 113.2 (d).
Deduce the structure from these given data and suggest other NMR techniques if necessary. 20%