國立成功大學 107 學年度碩士班招生考試試題

系　　所：臨床藥學與藥物科技研究所

考試科目：藥劑學　　考試日期：0206，節次：1

※ 考生請注意：本試題不可使用計算機。　請於答案卷(卡)作答，於本試題紙上作答者，不予計分。

1. Describe the classification of suppository bases according to their physical characteristics, and give two examples in each category. (12%)

2. Explain the following laws and give one example each of their applications in pharmaceutics or biopharmaceutics. (16%)
   (1) Stokes' Law
   (2) Fick's 1st Law
   (3) Newton's Law of Flow
   (4) Rauolt's Law

3. A drug suspension (125 mg/ml) decays by zero-order kinetics with a reaction rate constant of 0.5 mg/ml/hr at 25℃. (6%)
   (1) What is the concentration of intact drug remaining after 3 days when stored at 25℃?
   (2) How long will it take for the suspension to reach 90 % of its original concentration?
   (3) If Q_{10} of degradation reaction equals to 2, what will be the shelf life of the drug suspension when stored at 5℃?

4. The age of the intended patient population plays an important role in dosage form design. Explain the considerations in the dosage form design for the pharmaceutical care of the elderly patients. Describe in detail (e.g., compositions, characteristics, or design) two dosage forms suitable for the elderly patients. (16%)

5. Describe the methods for assessing bioequivalence of a drug product. (10%)

6. Describe and explain the categories of *in vitro-in vivo* correlations (IVIVC) for the evaluation of extended-release products. (10%)

7. Describe the factors that affect hepatic drug clearance. (10%)

8. The following figure shows the plasma concentration-time profile after constant-rate infusion of an antibiotic from 0 to 6 hr ($R_{in,0-6}$) and at another constant rate from 12 to 24 hr ($R_{in,12-24}$). In the first infusion, 300 mg was given. Assume a one-compartment model.
   (1) Estimate the clearance (CL), volume of distribution (V_d), and elimination half-life ($t_{1/2}$) of this antibiotic. (15%)
   (2) Calculate the second infusion rate ($R_{in,12-24}$). (5%)