系所組別： 臨床藥學與藥物科技研究所乙組

考試科目： 藥劑學

※ 考生請注意：本試題不可使用計算機

1. Calculate and answer the following questions:
   (1) What are the percentages of dissociated and undissociated sulfisoxazole (pKa = 5.0) at pH 4, 5, and 6? (6%)
   (2) Explain pH-partition hypothesis. (5%)
   (3) Based on pH-partition hypothesis, if sulfisoxazole is absorbed from gastrointestinal tract by passive diffusion, which pH (4, 5 or 6) would be most preferable for its transport through GI tract into systemic circulation? (4%)

2. What are the pharmacopeial classifications of solubility? (7%) Explain the importance of aqueous solubility for the design of drug dosage forms. (3%)

3. What penetration pathways may a drug molecule take during its percutaneous absorption processes (5%)? Discuss how the physicochemical properties of a drug influence its penetration through different pathways. (10%)

4. Define targeted drug delivery systems and give two examples in clinical applications. Explain their targeting design and mechanisms. (10%)

5. When switching a drug from intravenous to oral administration, what is the most important consideration? (8%)

6. What are the purposes of dissolution profile comparison? Describe the mathematical method(s) currently used to compare dissolution profiles. (15%)

7. Discuss the effect of decreasing intrinsic clearance and blood flow on hepatic clearance and elimination half-life of a drug after intravenous dosing. (15%)

8. The clearance and volume of distribution of a drug X are 0.5 L/hr and 9 L, respectively.
   (1) Calculated the rate of elimination of drug X when the plasma concentration is 30 mg/L. (4%)
   (2) What is the amount of drug X in the body at distribution equilibrium when the plasma concentration is 60 mg/L? (4%)
   (3) Calculated the half-life of drug X. (4%)