國立成功大學

114學年度碩士班招生考試試題

編　號：195

系　所：臨床藥學與藥物科技研究所

科　目：藥劑學

日　期：0211

節　次：第 1 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。

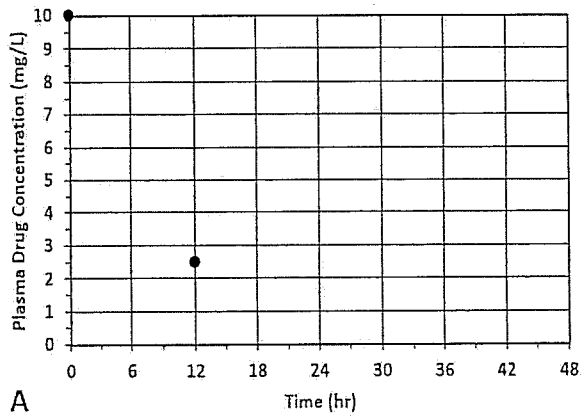
1. Illustrate the phenomena occurred with physical instability of emulsion and indicate their reversibility. Explain the possible mechanisms involved. (15%)

2. Describe five pharmaceutical mechanisms employed to provide controlled release dosage forms, and give one example of clinical application for each of them. What are the advantages of those controlled-release forms? (15%)

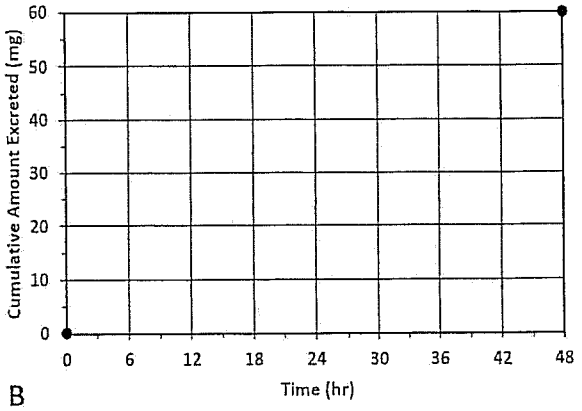
3. Give four formulation strategies which may be employed for oral delivery of BCS class II drugs. (10%)

4. Describe sterilization methods for preparing injectables and explain their mechanisms. (10%)

5. A drug that displays one-compartment disposition kinetics is administered as a100-mg single bolus dose to a healthy subject. Depicted in Fig. A is the plasma concentrations of drug obtained initially (10 mg/L) and 12 hr later (2.5 mg/L). Depicted in Fig. B is the cumulated urinary excretion of unchanged drug at 48 hr (60 mg). (36%)



A



B

(1). Calculate the volume of distribution (Vd), elimination half-life ($t_{1/2}$), total AUC (area under plasma drug concentration-time curve) and total clearance (CL). (16%)

(2). Estimate the fraction excreted unchanged in urine (fe) and the renal clearance (CLr). (8%)

(3). Estimate the cumulated amount excreted of unchanged drug at 12 hr (Ae_{12hr}). (4%)

(4). Given the drug is 40% bound in plasma, and that the glomerular filtration rate (GFR) of the subject is 100 mL/min, comment on the mechanisms involved in the renal excretion of the drug. (8%)

6. The pharmacokinetics of an oral drug is described by one-compartment model with first-order absorption and first-order elimination. A peak concentration (C_{max}) of 5 mg/L occurred at 1 hr following administration of a 1000-mg of the drug with 250 mL of water. The absorption rate at 1 hr was 200 mg/hr. What is the clearance of the drug? (4%)

7. Explain why the metabolism of some drugs is affected more than others when there is a change in protein binding. (10%)