1. A 100 kg patient is to be treated p.o. with sodium phenytoin capsules. Assuming a phenytoin volume of distribution of 0.7 L/kg, Km of 4 mg/L and vmax of 7 mg/kg/day, calculate the following:
   a. The loading dose to produce an initial concentration of 18 mg/L. How would you administer this dose?
   b. The daily maintenance dose to produce an average steady state concentration of 15 mg/L.

2. A phenytoin patient has a plasma concentration of 10mg/L at 300mg/day and 25mg/L at 400mg/day. Using graph paper, determine the Km and Vmax as well as the dose needed to produce a concentration of 15mg/L.

3. W.R., a 39-year-old, 70kg male, developed generalized seizures several months after an automobile accident in which he sustained head injuries. Phenobarbital is to be initiated. Calculate a loading dose of Phenobarbital that will produce a plasma level of 20mg/L. Calculate an oral maintenance dose for W.R. which will maintain a Phenobarbital concentration of 20mg/L. How should the dose be administered? If W.R. does not receive a loading dose, how long will it take to achieve a minimum therapeutic level of 10mg/L following the initiation of the maintenance dose? How long will it take to achieve a steady-state level of 20mg/L?

4. A patient (35 years old, 65 kg) is to be started on intravenous phenobarbital sodium. The therapeutic range is 10-30 mg/L. A loading dose is given so as to yield a Cp0 of 30 mg/L. Calculate this loading dose and the daily maintenance dose to produce an average steady state concentration of 20 mg/L.

5. M.W. is a 50-year-old, 70kg male with glomerular nephritis. His creatinine clearance is reasonably good, but he has a serum albumin concentration of 2.2g/dL. M.W. is receiving 350mg/day of phenytoin and has a steady-state phenytoin concentration of 6mg/L. What would be his phenytoin concentration be if his serum albumin concentration were normal? (normal serum albumin=4.4g/dL).