1. E. S., (35y, 70 kg, male), had been taking 300mg/day of sodium phenytoin; however, his
dose was increased to 350 mg/day because his reported plasma phenytoin concentration was
only 10 mg/L. Now his reported plasma phenytoin concentration is 20 mg/L. Both of the
reported plasma concentrations represent steady-state level. Calculate a new daily dose of
sodium phenytoin that will result in a steady state level of 15 mg/L (Salt factor = 0.92).

2. 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, $K_m$ of 4 mg/L and $V_{max}$ of 5 mg/kg/day,
calculate the following:
   a. Calculate an oral loading dose of sodium phenytoin to produce an initial phenytoin
      concentration of 16 mg/L.
   b. Calculate a daily maintenance dose of sodium phenytoin to produce an average steady
      state phenytoin concentration of 15 mg/L.

3. A female patient will take Depakene Syrup (Valproic Acid) chronically. In a previous trial of
   a single dose of Depakene (500 mg) in this patient, it was found that an initial concentration
   of 48 $\mu$g/ml had been reduced to 14 $\mu$g/ml within 24hr. Suggest a dosing regimen for chronic
treatment to maintain concentration within range from 50 to 100 $\mu$g/ml.

4. J.T., a 71.5 kg 65 year old male, suffers seizures, and is given phenobarbital of 2 mg/kg
twice a day (BID). After one month, his seizures are not controlled and his physician decided
to start a concomitant therapy of carbamazepine. Calculate the daily maintenance dose of
carbamazepine to produce a target steady state concentration of 7 mg/L using the immediate
release formulation. Later the results come back from the lab and the concentration of
carbamazepine was 8.75mg/L. In order to achieve the desired serum concentration, what is
your suggestion?