1. Which combination of the following pharmacokinetic characteristics best describes the neonates compared to Adults?

1) Less total body water (% of body weight)
2) Decreased protein binding
3) Lower renal clearance
4) Longer gastric emptying time

A) 2&3&4

B) 2&4

C) 4 only

D) All of the statements are right
2. Calculate the creatinine clearance of following patients using Cockcroft-Gault equation.

(1) A female, 40 years old, 160 cm, 60 kg, has a concentration of serum creatinine of 1.2 mg/dL.

(2) A male, 30 years old, 180 cm, 110 kg, has a concentration of serum creatinine of 2.5 mg/dL.
J. J. is a 55 years old male person with 75 kg weight and 176 cm height. He suffers from a severe urinary infection and the treatment suggested by the physician is 7 mg/kg gentamicin once daily IV infused over 30 minutes. Assuming his serum creatinine is 1.1 mg/dL and Vd=0.25L/kg, what is the measured peak gentamicin concentration 30 minutes after the infusion was ended and the measured trough gentamicin concentration 30 minutes before the new infusion at steady state?
4. T.C. is a 64 kg, 169 cm, 35 years old female patient with a serum creatinine of 0.8 mg/dL. She is going to receive IV infusion of vancomycin over 1 hour for several days. After achieving steady state, the peak concentration obtained 30 minutes after the end of the infusion was 20 mg/L and a trough concentration obtained 30 minutes before the next dosing was 0.5 mg/L. What is the “true” peak and trough concentration at steady state? What dose and dosing interval would you recommend for her (Assume Vd=0.25 L/kg)?
5. A 3 months old infant is hospitalized with possible pneumonia. 3 mg Tobramycin was given every 8 hours with IV infusion over 30 min. The dosing time is 6 am, 2 pm and 10 pm. Several days later, the serum concentrations of tobramycin are tested using HPLC and listed as follows:

<table>
<thead>
<tr>
<th>Time Point</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 am</td>
<td>6.0 µg/ml</td>
</tr>
<tr>
<td>1 pm</td>
<td>2.0 µg/ml</td>
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</tbody>
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Determine the half-life and volume distribution of tobramycin in this infant.