1. A drug has a volume of distribution of 500 L in a 70 kg adult. What does this tell you?

   ☐ It stays in the plasma

   ☐ It is heavily bound in the tissues

   ☐ It is cleared very fast

   ☐ The patient has severe oedema

2. Drug X has $EC_{50}$ 0.5 mg and drug Y has $EC_{50}$ 5 mg; both reach the same $E_{max}$. Which statement is right?

   ☐ Y is more potent

   ☐ X is more potent; they are equally efficacious

   ☐ Y has the higher ceiling

   ☐ X is more efficacious

3. Which drug type relieves an asthma attack?

   ☐ $\alpha 1$ agonist

   ☐ $\beta 2$ blocker

   ☐ Muscarinic agonist

   ☐ $\beta 2$ agonist

4. Which diuretic lowers potassium but keeps calcium?

   ☐ None of these

   ☐ Thiazide

   ☐ Loop

   ☐ Potassium-sparing

5. $\beta$-lactams are selective because human cells have no cell wall.

   ☐ True ☐ False

6. Which sign makes an opioid overdose most dangerous?

   ☐ Slowed breathing

   ☐ Small pupils

   ☐ Constipation

   ☐ Itching



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☐ True ☐ False

8. (Illustrative) $V_d = 70$ L and $CL = 7$ L/h. What is the half-life? Use 0.693.

   _____ h

9. A partial agonist has $E_{max} = 80\%$ of the system's maximum. What effect does it give at its $EC_{50}$?

   _____ %

10. Muscarinic stimulation slows the gut.

    ☐ True ☐ False

1. **It is heavily bound in the tissues**

   Little drug stays in the blood, so the apparent volume is huge.

2. **X is more potent; they are equally efficacious**

   Lower $EC_{50}$ means more potent; the same ceiling means the same efficacy.

3. **$\beta$2 agonist**

   $\beta$2 stimulation opens the airways.

4. **Thiazide**

   Thiazides lose $K^+$ but increase calcium reabsorption.

5. **True**

   The target does not exist in our cells.

6. **Slowed breathing**

   Respiratory depression is what kills.

7. **True**

   Inhibition blocks existing enzyme; induction must build new enzyme.

8. **6.93 h**

   $0.693 \times 70 \div 7 = 6.93$ h.

9. **40 %**

   $EC_{50}$ gives half the drug's own maximum, $80 \div 2 = 40\%$.

10. **False**

    It speeds the gut, causing cramps and diarrhoea.



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