Name: Demo

UFID#:

Question Set I (True or False)

(30 points)

True (A) or False (B). On the bubble sheet mark *A for true* or *B for false. Assume passive diffusion as the driving force for distribution.*

1: T F The larger the volume of distribution, the lower the plasma concentration. TRUE

2: T F The volume of distribution can not be larger than the actual volume of the patient taking the medicine. FALSE

3: T F For a drug that binds to a high affinity-low capacity binding protein in plasma, the f_u and the volume of distribution might depend on the dose of the drug. TRUE

4: T F A drug with a large volume of distribution is likely to have a narrow therapeutic window. FALSE

5: T F It is likely that drugs in liver disease patients might show a reduced volume of distribution. FALSE

6: T F A volume of distribution of 20 L for a lipophilic drug, suggest that the drug's plasma protein binding is more pronounced than the tissue binding. TRUE

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Question Set II (20 points) True (A) or False (B). On the bubble sheet mark *A for true* or *B for false.*

True (A) or False (B). On the bubble sheet mark *A for true* or *B for false. Consider a lipophilic acidic drug (pka=1, logP=5) and a lipophilic neutral drug B (logP=5). Both do not show any affinity to transporters and show similar tissue and plasma protein binding.*

7: T F Drug B will enter the brain faster.
TRUE

8: T F Drug A will be unable to enter the interstitial fluid.
FALSE

9: T F Drug B be is likely to have a larger volume of distribution.
TRUE

10: T F When the same dose of Drug A and B is given as an iv bolus injection, Drug A's C_o will be higher than Drug's B C_o.
TRUE

Name: Demo ✓

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Question Set III

(15 points)

Listed in the Table are two properties of acidic drug molecules:

- the fraction ionized and
- the partition coefficient of the unionized form.

	Fraction unionized at pH 7.4	Partition coefficient
Drug A	0.5	2
Drug B	0.2	0.001
Drug C	0	0.0001
Drug D	1	3

Select the drug(s) (A, B, C, or D) that fits best (selection of 1-4 drugs is possible)

11: Drug ..D..... will cross well built membranes the fastest.

12: Drug ..C..... will cross well built membranes the slowest.

13: In areas of the body were membranes are extremely thin and larger aqueous pores exist, even drug...B or C..... will be taken up at a relative good rate.

Comment to # 13. Due to the ambiguous statement every student will get 5 points

Name: Demo

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Question Set IV (True or False)

(15 points)

True (A) or False (B). On the bubble sheet mark *A for true* or *B for false. Assume no active transport.*

14: T F Compared to fat, the liver is likely to have a higher rate of uptake for small lipophilic drugs due to its higher blood flow rate.

15: T F The rate with which hydrophilic compounds will move across well-built membranes will depend on the concentration gradient between total drug in plasma and total drug in tissue.

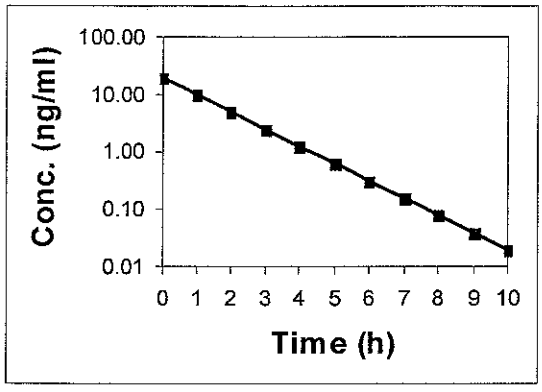
16: T F Permeability limited distribution is generally seen for small, lipophilic drugs

Name: Demo

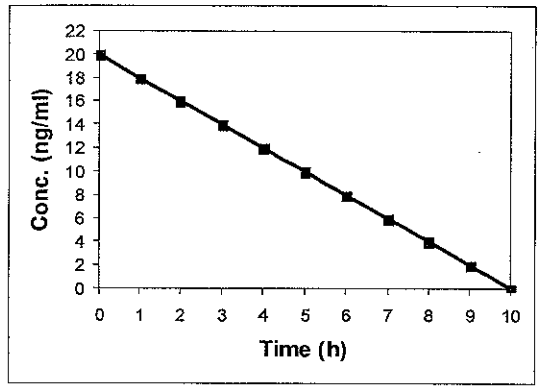
UFID#: _____

Question Set V (True or False)

(25 points)



Drug A



Drug B

True (A) or False (B). On the bubble sheet mark *A for true* or *B for false*

17: T F Drug B's rate of elimination is affected by the amount of drug in the body.
FALSE

18: T F Drug B's elimination rate constant has the unit "ng/ml".
TRUE

19: T F For Drug A, the fraction of drug eliminated per hour is constant.
TRUE

20: T F Drug B's concentration-time profile might be explained by saturated metabolic enzymes. TRUE

21: T F Drug A's elimination rate constant has the units "ng/ml".
FALSE

Name: Demo

UFID#: /

Question Set VI

(10 points)

Imagine a drug that is given as an intravenous bolus. The dose was 80 mg. The elimination follows first order principles. three hours after administration the drug concentration C1 of 1.48 µg/ml is observed. Four hours after the administration the concentration C2 was 0.37 µg/ml

22: What is the elimination rate constant of this drug?

A) 0.346 h^{-1}

B) 1.386 h

C) 1.386 h^{-1} 1.386 h^{-1}

D) 0.555 µg/(ml*h)

E) 0.370 h^{-1}

23: What will the concentration be 4.5 hours after injection?

A) 0.185 µg/ml

B) 0.370 mg/ml

C) 0 µg/ml 0.185 µg/mL

D) 0.185 µg/ml

E) none of the above A or D

Question Set VII

(10 points)

24: **A 200 mg dose** of a drug was administered to **patient 1** and **patient 2** by IV bolus injection. For patients 1 and 2, the initial concentrations were 1.25mg/L and 2.5mg/L, respectively. This drug follows a one-compartment body model, crosses membranes easily, distributes well into all tissues, and is around 50% bound to plasma proteins. Why is the initial plasma concentration different for these two patients?

Select the INCORRECT ANSWER

A) Patient 1 has more fat tissue than Patient 2.

B) Fraction unbound in plasma in Patient 1 is higher than that in Patient 2.

C) Tissue unbound fraction in Patient 1 is higher than that in Patient 2.

D) ~~Patient 1 has a smaller volume of distribution than Patient 1.~~

None of the above

C was intended

Due to the ambiguous question every student will get 10 points

Name: Demo

UFID#: /

Question Set VIII

(10 points)

If we know that the plasma drug concentration 4 hours after a gentamycin dose was given is 4.2 mg/L and the half live is 3 hours, what was the concentration after 1 hours. **Assume that the result will be between 1.0 and 9.9.mg/L.**

25: Mark A, B, C, or D, if the number **before** the decimal point is 1 (A), 2(B), 3(C), 4(D), 5(E). *Leave blank if this is not the case.*

26: Mark A, B, C, or D, if the number **before** the decimal point is 6 (A), 7(B), 8(C), 9(D), *Leave blank if this is not the case.* C

27; Mark A, B, C, or D, if the number **after** the decimal point is 1(A), 2(B), 3(C), 4(D), 5(E). *Leave blank if this is not the case.* D

28: Mark A, B, C, or D, if the number **after** the decimal point is 6 (A), 7(B), 8(C), 9(D), **0 (E)** *Leave blank if this is not the case.*

8.4 was the intended answer

However, students who bubbled 8.3 will get points as well

Name: Demo Student

UFID#: [redacted]

Question Set IX

(35 points)

29: T F // Free drug concentrations are always the same in plasma and tissues.

FALSE

30: T // F The slower the absorption from the muscle into the blood, the lower the maximum drug concentration observed in the plasma.

TRUE

31: T F // The slower the absorption of a drug from the muscle into the blood, the lower the plasma drug concentration at later time points.

FALSE

32: T // F A slow absorption might allow less frequent dosing.

TRUE

33: T // F A slower absorption might be advantageous for a drug with a narrow therapeutic window. TRUE

34: T F // Plasma is obtained from blood by letting it clog. FALSE

35: T F // Concentrations in plasma are of relevance for the drug therapy as they are generally identical to concentrations at the target site

FALSE