

PHCL 439

Problem Set # 1 Answers

1-

- a. 1.79
- b. 2.19
- c. -1.28
- d. -2.15
- e. $x \log a$
- f. $\log a / \log b = \log a - \log b$
- g. $-2 \log 10 = -2$
- h. 0.01
- i. $\log 10^{-x}$
- j. 2754.22
- k. 3.09×10^{-3}
- l. -0.9
- m. 4.605
- n. 0.99
- o. -4
- p. 10^6
- q. $10^{-2} = 0.01$
- r. 0.0498
- s. 18.5 mcg/ml
- t. 0.693 hr^{-1}
- u. 0.132 hr^{-1}
- v. 2.3
- w. 0.65
- x. -0.69

2- after 1 $t_{1/2}$ = 50 mg , 2 $t_{1/2}$ = 25mg , 5 $t_{1/2}$ = 3.125 mg

3- $t = 6.5 \text{ hr}$

4- $n = 2 t_{1/2}$

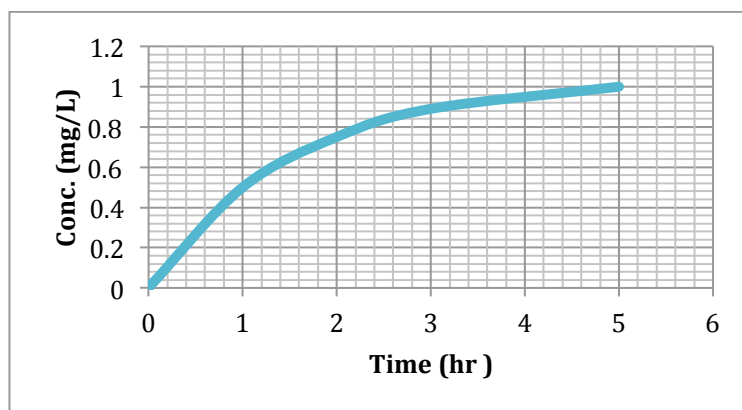
5- 91.17 mg

6- $n = 13 t_{1/2}$

7- % lost = 93.7%

8- $K = 0.173 \text{ hr}^{-1}$, $Cl = 9 \text{ L/hr}$, $R_0 = 126 \text{ mg/hr}$, $DL = 728 \text{ mg}$

9- $C_{ss, av} = 1 \text{ mg/L}$, $t_{1/2} = 1 \text{ hr}$, $t_{ss} = 5 \text{ hr}$, Figure:



10-

| | Drug C | Drug D | Comments |
|------------------|--------|--------|----------|
| C _{ss} | same | Same | |
| A _{ss} | ↓ | ↑ | |
| V | ↓ | ↑ | |
| Time to reach ss | ↓ | ↑ | |

11-

| | Drug C | Drug D | Comments |
|----------------------------|--------|--------|----------|
| C _{ss} | ↓ | ↑ | |
| A _{ss} | ↓ | ↑ | |
| CL | ↑ | ↓ | |
| Time to reach ss | ↓ | ↑ | |
| Time to reach 99.99% of ss | ↓ | ↑ | |

12-

t_{1/2}= 1.5 hr , Vd = 3846ml , Cp=12.38 mcg/ml , D= 47.69 mg

13- K= 0.462 hr⁻¹ , t_{1/2} = 1.5 hr

14-

a) cl= 5.25 L/hr

b) t_{1/2} = 0.4hr

c) Vd = 3 L

d) T to reach ss= 2 hr

e) C_{ss} = 30 mg/L

f) Yes, because t to reach ss is 2 hr and the C (20mg/L) at 4 hr

15-

a) 64 hr

b) Vd= 42.85 L

c) Cl= 1.5 L/hr

d) AUC= 805 mg. hr/L

16-

K= 0.016

| # Of doses | 2 | 4 | 6 | 12 |
|----------------------------|-----------|------|------|------|
| a. C _{N,max} mg/L | 0.29 | 0.42 | 0.49 | 0.53 |
| b. C _{N,Min} mg/L | 0.197=0.2 | 0.29 | 0.33 | 0.36 |

c. Cp (4hr after the 2nd dose): 0.268

d. *Cancelled

17-

a. $K = 0.081 \text{ hr}^{-1}$, $t_{1/2} = 8.6 \text{ hr}$, $C_0 = 39.5 \text{ mg/L}$, $V_d = 41 \text{ L}$

b. $\tau = 18 \text{ hr}$, $D = 944 \text{ mg}$ round to 1 g (Dosage regimen 1 g every 18 hr)

18- $\tau = 8 \text{ hr}$, $D = 148 \text{ mg}$ round to 150 mg (Dosage regimen :150 mg every 8 hr)

19- $DL = 480 \text{ mg}$ round to 500mg IV over 20 min

$R_0 = 67 \text{ mg}$ round to 70 mg /hr

20- $DL = 99 \text{ mg}$ round to 100 mg IV over 2 min

$R_0 = 1.5 \text{ mg /min}$