بسم الله الرحمن الرحيم

CALCULATIONS

Pearsonvue (KSA)

الأسئله خاصه لأسئلة بيرسون فيو لتخصص الصيدله للحصول على ترخيص مزاولة المهنة من قبل هيئة السعوديه للتخصصات الصحيه يتكون الاختبار من 100 سؤال اختياري يتكون من 3 اجزاء 1- أسئله فارماكولجى 2- مسائل رياضية 3- Cases

المذكره مجانيه وليست للبيع المقابل الوحيد هو الدعاء لمن تعب و ساهم فى تجميع هذه المذكره و رجاء مراجعة الجروب صاحب فكرةانشاء هذه المذكره كل فتره لمتابعة كل ما هو جديد نظراً للتحديث الذى يتم كل فتره على الأسئله من قبل شركة بيرسون فيو و رابط الجروب :

https://www.facebook.com/groups/pearsonvue.questions

1.Laws:

- Vd=dose/co
  Vd = Volume of distribution
  Co = Conc. of drug in plasma at zero time
- Loading dose = Vd x Css
  Loading dose = Vd [C2 – C1]
  - Loading dose .. is the dose needed to reach steady state
  - Css = Concentration of the drug in blood at steady state
  - C1 = Concentration of the drug in plasma
  - C2 = Concentration of the drug needed to add to C1 to reach equired conc.

- At steady state rate of drug input=rate of elimination
- Time required to reach steady state (Tss) = 4.5 or 5 t1/2
- Half life (T1/2) = the time required for the concentration of a substance in the body to decrease by half.

- Therapeutic index (TI) =LD50/ED50
  - LD50 = Median Lethal Dose is the amount of an agent that is sufficient to kill 50 percent of a population of animals
  - ED50 = Median Effective Dose is the dose that produces a quantal effect in 50% of the population
  - Drugs with narrow TI = highly dangerous

- Bioavailability =AUC/conc
  Bioavailability = AUC ((oral)) /AUC ((iv)) x 100
  Bioavailability =plasma conc of drug by any route/plasma conc of drug by iv
  AUC = Area Under Curve

- Specific gravity = Wt. of substance ((Kg)) / Wt. of equal amount of water ((L))
  Specific gravity = mass unit volume of sub. / mass unit volume of water
  Specific gravity = Denisty of sub. / Denisty of equal amount of water
  Denisty = Mass ((gm)) / Volume ((ml)) .. or Kg/L

- mEq = Wt. ((mg)) x valency / M.wt
  mEq = milliequivalent

Clearance Laws:

- Clearance (Cls) = 0.693 x Vd / T 1/2
- Vd=dose/co
- Cls=rate of elimination/drug conc
- Cls =renal cls +non renal cls
- Cls = Ke x Vd ……. Ke = elimination rate conistant
- Creatinine clearance for male =(140 – age)x weight /72 x ser. Creatinine

- Cr.cls for female = Cr.cls for male x 0.85

Molality Laws :

- Molality ((m)) = No. of moles of solute / Kg mass of solvent
- No. of moles = Wt. of solute / M.wt
- Mass ((M)) = Denisty ((D)) x Volume ((V))

Molarity Laws :

- Molarity ((M)) = No. of moles of solute / L volume of solution

Osmolarity laws:

- Millimoles = [wt. of sub. ((gm)) / M.wt] x 1000
- mosm = millimoles x no. of species
  Examples Of no. of species:
  Ex1: NaCl = 1 Na + 1 Cl = 2 -------- Ex2: CaCl2 = 1 Ca + 2 Cl = 3
  --- check problems No. 11 & 12

Some Conversions :

Weight:

- Kg = 2.2 Pound ((lb))
- Grain = 0.065gm

Volume:

- Tea spoonful ((tsp)) = 5 ml
- Table spoonfull ((tbsp)) = 15 ml
- 16 drop ((dp)) = 1 ml
- 1 fluid ounce = 30 ml
- 1 L = 0.22 Gallon
- 1 L = 10 Decilitre

Tempreture:

- 5F = 9C + 160
  F = Fehrenhiet --------- C = clsius

Length:

- 1fool ((ft)) = 12 inch
- 1inch =2.54 cm

Others :

- PPM = Part Per Milion = mg / L
- 10% w/w = 10 gm in 90 gm ((total wt. = 100 gm)) --------- w/w = gm in gm

- 10% w/v = 10 gm in 100 ml ((total voume = 100 ml)) --------- w/v = gm in ml
- 10% v/v = 10 ml in 90 ml ((total voume = 100 ml)) ---------- v/v = ml in ml

Some Molculer weights you may use:

- HCl = 36.4
- NaCl = 58.5
- CaCl2 = 111
- Kcl = 74.5
- NH4Cl = 53.5
- MgCl2 = 95.2

Some other laws haven't be used till now but may be useful for you ((just read)) :

- Child dose = wt ((lb)) / 150 x adult dose
  Child dose = age / (age+12) x adult dose
- E = Extraction ration = drug elimination of an organ ((eg. Liver))
  E = [arterial drug conc. - venous drug conc.] / arterial drug conc.
  Cls of liver = E x hepatic blood flow

2.Problems :

1- amount of drug is 5 mg in 1 ml what the amount of drug in 1 tsp in microgram
a) 5
b) 25
c) 500
d) 2500
e) 25000

Answer:
1 tsp = 5 ml
5 mg …. 1 ml
X mg …. 5 ml

X = 5 x 5/1 = 25 mg = (25 x 1000) 25000 mcg

***

2- A solution is made by dissolving 17.52 g of NaCl exactly 2000 ml. What is the molarity of this solution?

a- 3.33

b- 0.15

c- 1.60

d-3.00 x 10 -4

e-1.6x10 -4

Answer :

Molarity=mole/volume (L)

1 Mole=molecular weight of subs. In 1 grams

No of Moles = wt / Mwt

So, molecular weight of NACL=23+34=57

So, Mole=17.52/57=0.307

So, Morality=0.307/2=0.153

***

3-5ml of injection that conc. 0.4% calculate the amount of drug?

a-0.2mg
b-2mg
c-200mg
d-2000mg
e-20mg

Answer:
0.4 gm … 100 ml
X gm … 5 ml
X = 5 x 0.4/100 = 0.02 gm = (0.02 x 1000) = 20 mg

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4-An elixir contains 0.1 mg of drug X per ml. HOW many micrograms are there in one tsp of the elixir

A. 0.0005 micrograms
B. 0.5 micrograms
C. 500 micrograms
D. 5 micrograms
E. 1500 micrograms

Answer :
0.1 mg in 1 ml
X mg in 5 ml

X = 0.1×5 /1 = 0.5 mg = 500 micro

***

5- sol contain D5W another one contain D50W we want to prepare sol cotain D15W its volune is 450ml ... how much ml we need of each sol
a) D50w/D5w=10/35

Answer:
try the choices ratio in the equation :
(C1 × V1) + (C2 × V2) = (C × V)
(50 × 10) + (5 × 35) = (15 × 45)

Another answer :
(X) 50 ---------- 10 15 – 5 = 10
15
(Y) 5 ---------- 35 50 – 15 = 35

X / Y = **10** / **35** ---------- Y = 3.5 X
X + Y = 450 ---------- X + 3.5 X = 450
4.5 X = 450 --------- X = 450 /4.5 = **100**
Y = 3.5 X = 3.5 x 100 = **350**
X = amount of D50w …. Y = amount of D5w

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6- prescription
hydrocortisone 2%
Cold cream 60gm
You have concentrations of hydrocortisone 2.5% & 1% how many grams will you use from two concentration?

a- 20gm from 1% and 40gm from 2.5%
b- 40gm from 1% and 20gm from 2.5%
c- 30gm from both

Answer:
try the choices ratio in the equation
(C1 × V1) + (C2 × V2) = (C × V)
(1 × 20) + (2.5 × 40) = (2 × 60)

Another answer :
(X) 2.5% ---------- 1 2 – 1 = 1
2%
(Y) 1% ---------- 0.5 2.5 – 2 = 0.5

X / Y = 1 / 0.5 ---------- X = 0.5 Y
X + Y = 60 -------- 0.5 Y + Y = 60
1.5 Y = 60 ---------- Y = 60 /1.5 = **40**
X = 0.5 Y = 0.5 x 40 = **20**
X = amount of 2.5 % …. Y = amount of 1%

***

7-Prescription
hydrocortisone 2% w/w
Cold cream 60gm
you have hydrocortisone solu. 100 mg/ml .. how many milliliters will you use from the solution ?

a.10 ml
b.20 ml
c.40 ml

Answer :
2% w/w = 2% x 100gm = 2 gm means the prep. needs 2 gm of hydrocortisone
0.1 gm in 1 ml
2 gm in X ml

X = 1 x 2/0.1 = 20 ml

***

8- if we have 0.8687g cacl2 in 500 ml solvent , denisty of the solvent is 0.95 g\cm3 ....Find the molality

a- 0.0165 Molal
b- 0.0156 Molal
c- 0.0165 m
d- 0.0156 m

Answer :
Moles = mass/m.wt = 0.8687 / 111 = 0.00782
Weight = density × volume = 0.95 × 500 = 475 gm = 0.475 kg
Molality = moles / kg of solvent = 0.00782/0.475 = 0.0165 molal

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9. How gm of substance X must added to 2000 gm of 10% substance X solution in order to prepare 25% of substance x solution

a) 10000 gm
b) 400 gm
c) 40 gm
d) 10 gm
e) 0.4 gm

Answer:
(C1 × V1) + (C2 × V2) = (C × V)
(100% × Xgm) + (10% × 2000 gm) = (25% × 2000+X gm)
100X + 20,000 = 50,000 + 25X
100X - 25X = 50,000 - 20,000
75X = 30,000 ..... X = 30,000/75 = 400 gm

Another answer :

100% ---------- 15 25 - 10 = 15
25%
10% ---------- 75 100 - 25 = 75
so the ratio between 100% : 10 % to reach 25% = 15 : 75
2000 gm ------ 75
X gm ---------- 15
X = 2000 x 15 / 75 = 400 gm

***

10- How much water (in milliliters) should be added to 250 mL of 1:500 w/v solution of benzalkonium chloride to make a 1:2000 w/v solution

A/0.4L
B/2L
C/0.2L
D/ 0.05L

Answer:
250/500 = 0.5
250/2000 = 0.125
0.5 – 0.125 = 0.375

***

11-How many mOsm are present in 1 liter of sodium chloride injection (Mwt: sodium chloride= 58.5) ?

308 mosm

Answer :

- Note ; normally conc. of NaCl injection = 0.9%
  that means 0.9 gm in 100 ml ..... that means 9 gm in 1 L
- Step 1.
  millimoles = wt (gm) / Mwt (gm) × 1000 = 9 /58.5 ×1000 = 154
  Note ; millimole = wt (mg) / Mwt (gm)
- Step 2.
  mOsm = millimoles x no. of dissosation particles =154 × 2 =308 mosm

***

12-A solution contains 448 mg of KCl (MW=74.5) and 468 mg of NaCl (MW = 58.5) in 500mL. What is the osmolar conc. of this solution ?

0.056 Osm/l

Answer :

- For (KCl)
  0.448 gm in 500ml
  X gm in 1000 ml ..... X= 0.896 gm
  moles= 0.896/74.5 = 0.012
  Osm= moles × no. of dissosation particles =0.012 × 2= 0.024
- For NaCl
  0.468 gm in 500 ml
  X gm in 1000 ml ..... X= 0.936 gm
  moles= 0.936 /58.5 = 0.016
  Osm= 0.016 × 2= 0.032
- Total osmalar conc. of sol. = 0.032 + 0.024 = 0.056 Osm/l

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13. A Patient weighting 80 Kg is supposed to receive a drug at a dose of 2mg/kg/day. What is the dose that the patient should take for each day:

A. 80 mg ..... **B. 160 mg** ..... C. 240 mg ..... D. 320 mg ..... E. 400 mg

***

14. Drug X is a given to a 70 Kg patient at an infusion rate of 0.95 mg/kg/hr. How much drug we need for a 12-hr infusion bottle

A. 798 mg ..... B.66.5 mg ..... C. 665 mg ..... D. 84 mg

***

15. how many gm of water add to 5% KCL soln to make 180 gm of solution(w\w)?

171 gm

Answer:
5gm----------100
Xgm----------180

X= 5x180/100=9 gm
So, the amount of water is:- 180 - 9 =171 gm

***

16. hypoparathyroid patient with tingling and numbness has the following lab result so what is value of calcium correlative to albumin when below 45

	Result	normal value
Calcium	1.6	2.25-2.6
Albumin	34	18-56

a.2.3 b-1.5 c-2.5

N.B: 2.3 is a Conistant value you have to know

***

17. in clinic patient prescriped with a 500mg dose of aspirin , initial plasma conc is 100mg .. With half life 6 hours calculate total body clearance ?

a.0.5 L/hr
b.5 L/hr
c.50 L/hr

Answer:
Vd = dose / initial conc = 500/ 100 = 5L ..... T1-2 = 6 hr
Cl = 0.693 Vd / T1-2 = 0.693 × 5 / 6 = 0.5775 L/hr

***

18. - aminophylline (80%theophylline) was prescriped for asthmatic patient in a dose of 500mg , half life =6.93 hours how many hours will it take to reach below 2 % ?
42 hr

Answer:
(80%) ...T1... (40%) ...T2... (20%) ...T3... (10%) ...T4... (5%) ...T5... (2.5%) ...T6... (1.25%)

Time = 6 × T1/2 = 6 × 6.93 = 41.5 hr

***

19. Drug aminophylline (80% theophylline) in 500ml sln . Half life 6 h .what is the concn of theophylline after 1 day ?
5%

Answer:
1 day = 24 hr = 4 T1-2
(80%) ....T1... (40%) ...T2... (20%) ...T3... (10%) ...T4... (5%)

***

20.For 1 litre of NaCl 3% calculate the osmolarity m.wt=58.5
1026

Answer:
3% means 3gm in 100 ml ... that means 30gm in 1L
No. of moles = wt / Mwt = 30 / 58.5 = 0.513 mole
Osm = no. of mole × no. of dissosation particles = 0.513 × 2 = 1.026
1.026 x 1000 = 1026 mosm

***

21. If we give 250 ml of a drug and the area under curve was 112mg/hr/L and after that we give 500 ml and the area under curve was 56 mg/hr/ml
The bioavilability decreased by

A-25%
b-50%
c-75%

Answer:
250ml 112
500 ml X

X= 122×500 / 250 = 224
But real auc was = 56
So the bioavilability decreasing = 56/224 ×100 = 25%

***

22. drug A taken IV and drug B taken orally
the AUC of A =300 and Auc of b =225
what is biovalbility of drug

A. 85%
B. 90%
C. 75%
D. 80%

Answer:
Bioavailability= auc oral /auc iv ×100 = 225/300 × 100 = 75%

***

23.T 1/2 .. in frist line is ....
A .1/k
B . 0.693/ k

***

24. a drug is given as iv infusion in a rate of 2mg/hr ,its T1-2 = 2hr , how much mg of the drug we need to reach steady state

A. 4mg
B. 16mg
C .20mg
D. 40mg

Answer :
We reach steady state after 5 T1-2 = 5 × 2 = 10hr
2mg ...ever... 1 hr
Xmg ...after... 10 hr
X = 2×10/1 = 20mg

***

25. a drug with T1/2 = 72hr , the body will recive complete dose after ;

A. 1 day
B. 2days
C. 1week
D. 2weeks

Ans: We will reach Steady state after 5 half-life = 5×72= 360hr = 2weeks

***

26. A patient takes levofloxacin 250mg/ml , the pharmacist has levoflaxacin injection 500mg / 20 ml , the concentration needs to be dilated for patient .. which of the following concentration is more accurate:

A/ 10 ml
B/ 15 ml
C/ 7.5 ml

Answer :
500 mg in 20 ml
250 mg in X
X = 20 x 250 / 500 = 10 ml

***

27. priscription for a child contain Omeprazol syr. 10 mg/ml twice daily for a week .. you have Omeprazol capsul 20 mg in your pharmacy,
how many capsules are needed to prepare solution with concantration 2 mg/ml ??
7 cap.

Answer:
10 mg/ml twice daily for a week = 140
20 _____1
140 _____ X

X=140/20=7

***

28.Drug 500mg and 300mg eleminated outside the body and t1/2=5hr and another drug same first one but with conc 1000mg .. how many hrs it take to eliminate 600mg ot of the body?

5 hrs

Answer :
CLs=rate of elimination /drug conc
CLs1=300/500=0.6
Vd=t1/2×cls/0.693=5×0.6/0.693=4.3
CLs2=600/1000=0.6
t1/2=0.693×vd/cls=0.693×4.3/0.6=5 hrs

***

29. HOW can prepare 100 ml of 12% MgCl by taking?

a-12ml of MGCL dissolve in 100 ml water

b-12 gm of MGCL dissolve in 100 ml water

c-12ml of MGCL dissolve in 1000 ml water

d-90.5 ml of MGCL dissolve in 100 ml water

Note ; w/v = g/ml ..... ex ; 4% w/v means 4 gm in 100 ml

***

30. **man** 40 years and 80 kg sr ce 0.5 mg\dl find creatinie clearance mg\ml :

a.222

b.232

Answer :
Cr.cl for male = (140 – age)x weight /72 x ser. Creatinine
=(140 – 40) x 80 / 72 x 0.5 = 222

N.B : The same data for **female** the answer is : **189**
Cr.cl for female = Cr.cl for male x 0.85 = 222 x 0.85 = 188.7

***

31.15 g of drug is added in 150mg of a solvent. Then what is the total concentration of drug in the final mixture:

a- 6.01%

b- 9.10%

c- 10%

d- 15%

Answer:
15 + 150 = 165
15 g in 165
X g in 100
X = 100 x 15 / 165 = 9.10

***

32. A bag containing 250 ml of 25000 IU heparin
The patient weigh 70 kg should recieve 10 IU/kg/hr...calculate the amount in ml the the patient should recieve in one hour...
7 ml

Answer:
10 iu for 1 kg
X iu for 70 kg
X = 70 x 10 /1 = 700 iu

250 ml of 25000 iu
X ml of 700 iu
X = 700 x 250 / 25000 = 7 ml

***

33.Patient with prescription of Captopril 50 mg per tab with a dose of 100 mg daily for 4days and you only have the 25 mg tab .. How many tablets you will dispense ?

16 Tab

Answer :
100 mg daily for 4 days = 400 mg
400/25 = 16 tab

***

34.A problem with the following data
Dose = 1000
Initial conc =10
Elimination rate constant=0.1
Calculate total clearance ??

a-250
b-200
c-150
d-100
e-10 litre

Answer:
Cl= vd × kel
Vd=dose/conc=1000/10=100
Cl=0.1×100=10

***

35.Problem with the following data :
Density = 1.75 g/cm^3
Mass = 15 gm
Calculate the Volume ?

a.11
b.10
c.8.52

Answer:
Denisty = mass / volume
volume = 15 / 1.75 = 8.57

***

36.Prescription contain :
Clindamycin 1.5%
dilultion with alcohol up to 300 ml
you have a bottle 100 ml of 10% clindamycin
how many millelitres will you use ?

a.7.5
b.45

Answer:
1.5 100
X 300
X=4.5

10 100
4.5 X
X=45

***

37.A drug with Conc. 400 m and T1/2 = 12 hr.s
the concentration will decrease after 1 day by …

a.10%
b.25%
c.75%
d.90%

Answer:
24 hr.s = 2 half lives
(400) …T1 … (200) … T2 … (100)
so you lose 300 of the drug
(300 / 400) x 100 = 75%

***

38. A drug should be given 50 ml of 2 meq/ml , but available concentration is 10 meq/ml, How many ml should dispense to patient?

a.5 ml
b.10 ml
c.15 ml
d.20 ml
e.25 ml

Answer:
2mg -----1ml
X mg-----50ml
X = 50 x 2 =100ml

10 mg-------1ml
100 mg------ X
X = 100 x 1 / 10 =10 ml

***

39. 30gm of 1% hydrocortisone mixed with 40 gm 2.5% hydrocortisonen what is the concentration of the resulting solution?

a) 3%

b) 1.85%

c)10%

d) none of the above

Answer :
C1.V1 + C2.V2 = C3.V3

30gm × 1% = 0.3gm

40gm × 2.5% = 1gm

So, 1.3 gm is in 70 gm

So, the con. =1.3/70=1.857%

***

40. if we have 90% of substance X solution , 50% of substance X solution , how mixing both to give 80% of substance X solution ?

a- 3 : 1

b-1:3

c-10:30

d- 5:9

Answer :

We should try all answer with that equation

(C1×V1) + (C2×V2) = (C×V)

(90% × 3) + (50% × 1) = (80% × 4)

(270) + (50) = (320)

(320) = (320) so the answer is 80%

Another answer :

90% 50%
80%

30 10

So .. 90/50 to reach 80 % equal 30/10 = 3/1

***

41. - prep. contain coal tar 30 part ... petroleum 15 part ... adeq. to 150 part ... what conc. of coal tar in 500 ml:

100 part

Answer:

30 part present in 150ml of prep.

X part present in 500ml of prep.

so, conc. of coal tar in 500ml=30x500/150= 100 part

***

42.How many grams needed from drug in one teaspoonful , if 5 tspfull doses contain 7.5 gm of drug ?

a) 0.0005

b) 0.5

c) 500

d) 1.5

Answer:

7.5gm in 5 tsp .....
X gm in 1 tsp .....
X = 7.5×1 /5 = 1.5 gm

N.B: 1 tsp = 5 ml

***

43.KI solu. has 0.5mg/ml dissolve in 30ml water calculate the amount of KI in the solu. ?

15mg

Answer :
0.5 mg in 1 ml
X mg in 30 ml

X= 0.5×30 /1 = 15 mg

***

44. - the dose of drug is 0.5ml per day and the total amount of the drug Is 100ml what is the total dose ?

200

Answer :
no. of doses = amount of drug / amount of one dose = 100/0.5= 200

***

45.if we have a solvent costs 150 riyal/kg and its specific gravity =1.07 ,so the cost for 100ml of the solvent is :

16.05 riyal

Answer :
Weight (Kg) = volume (L) × sp. Gravity …….. 100 ml = 0.1 L
wt = 0.1 × 1.07 = 0.107 Kg

1 kg cost 150 riyal
0.107 kg cost X riyal

X = 0.107×150 /1 = 16.05 riyal

***

46- A patient cholesterol level is equal to 4mM/L. This cholesterol level can be expressed in terms of mg/dL
(molecular weight of cholesterol = 386)

A.0.0154 mg/dL
B. 0.154 mg/dL
C. 1.54 mg/dL
D. 15.4 mg/dL
E. 154 mg/dL

Answer :
Conversion from (mM) to (mg) = conc. × molecular weight
Conversion from (L) to (dL) = conc. / 10
Conc (mg/dl) = conc. (mMol /L) × mwt / 10 = 4×386 /10=154.4

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47.drug container contain 90 mg each tablet contain 0.75mg.
how many doses ?
No. of doses = total wt / wt of one dose = 90 / 0.75 = **120 dose**

***

48- How need prepare benzacainamid conc. 1:1000 ,30cc of benzocainamid solution?

a-30 mg
b-50 mg
c-80 mg
d-100 mg
e-130 mg

Note : cc = cubic centimeter = cm^3 = ml

Answer :
1 gm ----- 1000 ml
X gm ----- 30 ml

X = 30 x 1 / 1000 = 0.03 gm = 30 mg

***

49. The Molal concentration of 0.559 M solution is ;
(Mwt=331.23 g/mol) (density of solution =1.157g/ml)
a-1.882
b-0.882
c-0.559
d-<u>0.575</u>

Answer :
Mass = moles × Mwt = 0.559 × 331.23 = 185.15 gm
wt of solution = Volume × Destiny = 1000 ml × 1.157=1157 gm
so wt of solvent = 1157 - 185.15 = 971.85gm = 0.971 kg
molality = moles / kg of solvent = 0.559 / 0.971= 0.575 molal

***

50.Problem asked to calculate Plasma Osmolarity
an you have given some data
Na 140
Cl 103
Hco3 18
Bun 8
S.cl 8

Answer is : **<u>263</u>**

N.B:

- the data of this problem isn't complete here .. 263 is the right answer just know it
- in general .. to calculate plasma osmolarity follow this equation : 2[Na] +[Glucose]/18 +[BUN]/2.8

***

51. drug decrease after 2hr to 50% &the user takes it every 2 hr how many hours needed to reach steady state ?

A/2-4
B/6-8
C/10-12

Answer:
Time to reach steady state ((Tss)) = 4 to 5 T1/2
4 x 2 = 8 ….. 5 x 2 = 10
N.B: if there is ((8-10)) if choices … choose it

***

52. 10g of a drug was dissolved in 150g of solvent, what is the final concentration?
6.25%

Answer:
10 … 160
X …. 100
X = 100 x 10 / 160 = 6.25 %

***

53.A physician prescribed paracetamol 120mg/5ml to take 10ml every 8 hours but the pharmacist has only paracetamol 160mg/5ml . what is the volume to be administered to give the effect of the first dose :

a- 6.5 ml
b- 7.5 ml
c- 10 ml
d - 11 ml

Answer:
dose = 240 mg paracetamol
160 mg in 5 ml
240 mg in X ml
X = 240 x 5 / 160 = 7.5 ml

***

54.A drug with conc. 100 mg/ml .. after 1 hr. it decreased to 50 mg/ml .. calculate its concantraion after 3 hours :

a.25
b.12.5
c.6.25

Answer :
100 .. [1hr] .. 50 .. [2hr] .. 25 .. [3hr] .. 12.5

***

55. how many gm of water add to 5% KCL soln to make 100 gm of solution (w\w) ?
95gm

N.B: 5% (w/w) means 5gm of KCl in 95gm of water and solution total wt=100

***

56. 1000 mg of drug follow one compartment.. calculate vd ?

Time	0 hr	2 hrs	4 hrs	6 hrs	12 hrs
Conc mg/ml	80	58	34	28	10

A.12.5 litre
B. 4 litre
C. 45 litre

Answer :
Vd = dose / initial conc.
Vd = 1000 / 80 = 12.5 L

***

57. Drug dose 1000 mg orally

Time	0 hr	2 hr.s	4 hr.s
Conc.	40	18	8

What is the Vd of the drug ?
a.55 litre
b.45 litre
c.75 litre
d.25 litre

Answer:
Vd= 1000/40 = 25 L

***

58. HOW can prepare 100 ml of 12% MgCl by taking?

a-12ml of MgCl dissolve in 100 ml water
b-12 gm of MgCl dissolve in 100 ml water
c-12ml of MgCl dissolve in 1000 ml water
d-90.5 ml of MgCl dissolve in 100 ml water
e-0.95 ml of MgCl dissolve in 100 ml water

***

59. How many grams of drug used to prepare 150 ml solution ,, if one tsp contains 7.5 mg of drug
a. 4 gm
b. 0.225 gm
c. 2.25 gm

Answer:
7.5 mg in 5 ml
X mg in 150 ml
X = 150 x 7.50 / 5 = 225 mg = ((225/1000)) 0.225 gm

***

60. Patient takes dose 20 mg/kg/day
what is the dose if patient weight 60 pound ?
545 mg/day

Answer:
you have to know .. 1 kg = 2.2 pound (lb)

20 mg -------- 2.2 lb
X mg ---------- 60

X = 60 x 20 / 2.2 = 545.45 mg/day

***

61.A child was prisciped a drug with dose 65 mg/kg/hr .. his body weight = 35.2 pound
Calculate the dose ..

a.1.040 gm
b.10.40 gm

Answer:
35.2 pound = 15.97 kg = about 16 kg

65 mg … 1 kg
X mg … 16 kg
X = 16 x 65 = 1040 mg = 1.040 gm

***

62.Calculate the Specific gravity of a substance of volume = 121.92 ml & wt = 107.5

A/1.88 s.g.
B/2.88 s.g.
C/0.88 s.g.
D/8.8 s.g.

Answer:
Denisty = wt. / volume
= 107.5 / 0.12192 = 881.7

Sp. Gravity = denisty Of substance / den. Of water = 881.7 / 1000 = 0.88

***

63. The ppm concentration of a 6.35x1 0-6M solution of sucrose (Mwt of sucrose is 342.3 g/mole) is:

A. 2.174 × 10-3ppm
B.2.174 ppm
C.2.174 × 10-6 ppm

Answer :
ppm concentration = mass in mg / volume in liters
Molar conc means no. of mole in 1 liter .... then volume= 1L
mass = moles × Mwt = 6.35x10-6 x 342.3 = 2.174x10-3gm = 2.174 mg
Then 2.174 mg is in 1L = 2.174 ppm

***

64. A 500 infusion bottle contains 11.729 mg of potassium chloride (KCl). How many mEq of KCl are present? (Mwt of KCl = 74.6)

A. 0.1571 mEq
B. 1571 mEq
C. 6.37 mEq
D. 0.00637 mEq

Answer :
mEq = wt (mg) × valency / Mwt = 11.729 ×1 / 74.6 mEq = 0.1572

***

65. Fifty micrograms equals:

a-50000 (nanogrames)

b- 0.05 (milligrams)

c- 0.0005 g

d- a and b

e- a and c

Note; ... mc-g = 1000 nano-g ... milli-g = 1000 mc-g ... g = 1000 mg

***

66. a 2 mg/L solution , according ppm

a-2 ppm

b-0.002 ppm

c-0.000002 ppm

Note ; ppm = mg / L

ppm : part per milion

***

67. What is The Specific gravity of substance has Weight=Y & The volume is X ?

Y/X

Answer :

The Specific gravity =Density of the substance/Density of water

Density of water = 1 .... Density of substance = weight/volume

So, the sp. gravity of sub. =weight (Y) /volume(X)/1 = Y/X

***

68. drug decrease to 50% of its plasma conc. after 2hr .. we have dose A given each 2hr and dose B given each 4 hour … in dose B what is the plasma conc. at steady state ?

A/0.25

B/0.5

C/2

***

69.Calculate C av .ss
1gm vancomycin for patient 78 kg Taken by infusion rate 12 hr /7 day
T 1/2 =8
Vd = 1 k/l

A. 3
B. 5
C. 17
D.19

We can't find the right answer .. try to solve it ☺

***

70.Paitents on treatment with acyclovir and famcyclovir .. group that treated by acyclovir show recurrence by 27% and who treated by famcyclovir show recurrence by 25%
the ques. is how many patients should take famcyclovir over than who take acyclovir per year to reach equivilant results ?

The answer is : **cannot be calculated because of low information**

***

71.Patient's dose of some drug is 0.5 mg daily and Vd = 500 L .. his body elimination rate is 110.16 Litre per day … in the last day about 80 % of the drug was in his blood
Calculate half life ..

3 days

Answer:
Cl=0.693 x vd / T1.5
T1/2 = 0.639 x 500 / 110.16 = 3.14 day

***

72.Problem with data :
drug 10 mg/ml and t1/2= 3 hrs
how much hrs needed to reach steady state??
12 – 15

Answer:
Time required to reach steady state (Tss) = 4 – 5 t1/2
4x3=12 ……. 5x3=15

***

73. drug t1/2= 2h .. dose A taken every 2h and dose B taken every 4h compare plasma concentration a to b ..

a.1/2
b.2

***

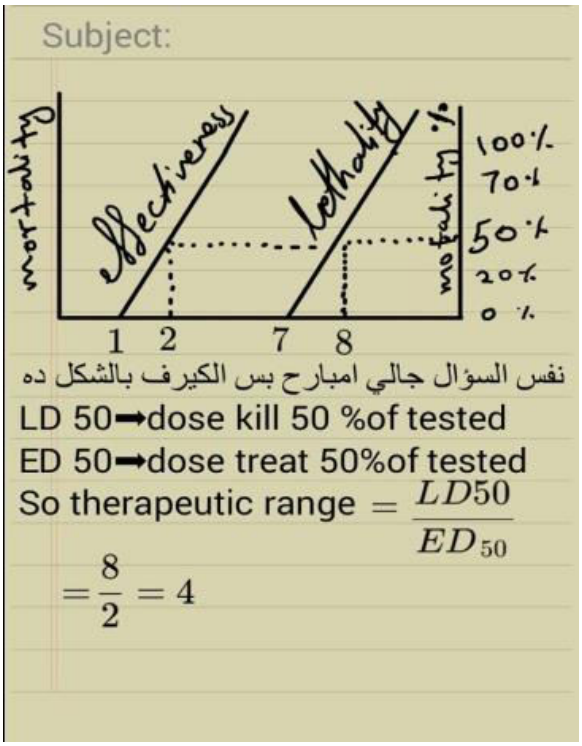
74. A half life of a drug decrease by 50% , after how hours will the time needed to decrease to 2%

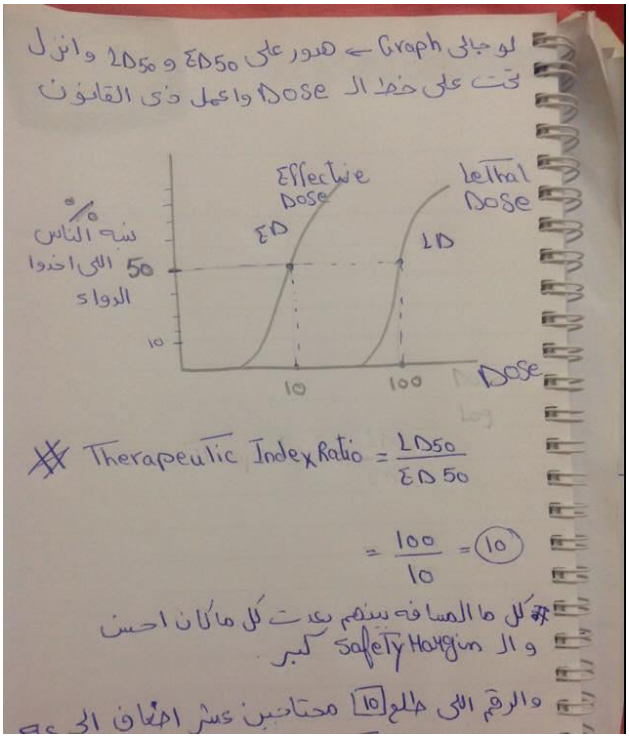
a.2 …. b.10 …. c.5 …. **d.12**

Answer :
100% .. [T1] .. 50% .. [T2] .. 25% .. [T3] .. 12.5% .. [T4] .. 6.25% .. [T5] .. 3.1% .. [T6]
1.5% so we need 6 half lives to reach below 2% ..... T1/2 = 2 h.
2 x 6 = 12 h.

***

75.A problem with thin curve and ask for therapeutic range
answer : 8/2 = **4**
- in other exams the same curve with LD50 = 20 & ED50 = 5
so TI = LD50/ED50 = 20/5 = 4





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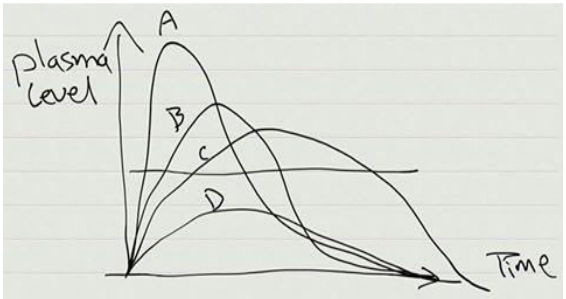
76.which drug has higher bioavailability ?

1.A … 2.B … 3.C … 4.D

N.B : bioavilability measured by comparing plasma level
higher plasma level = higher bioavailability



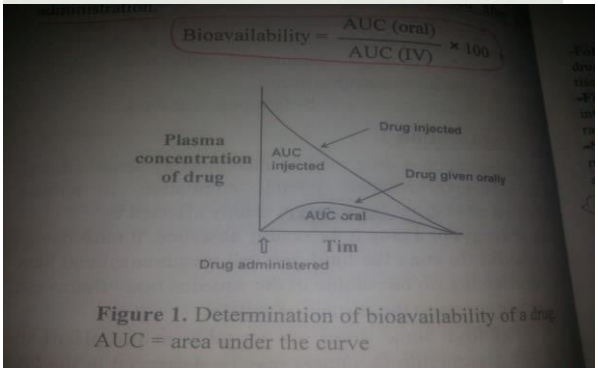


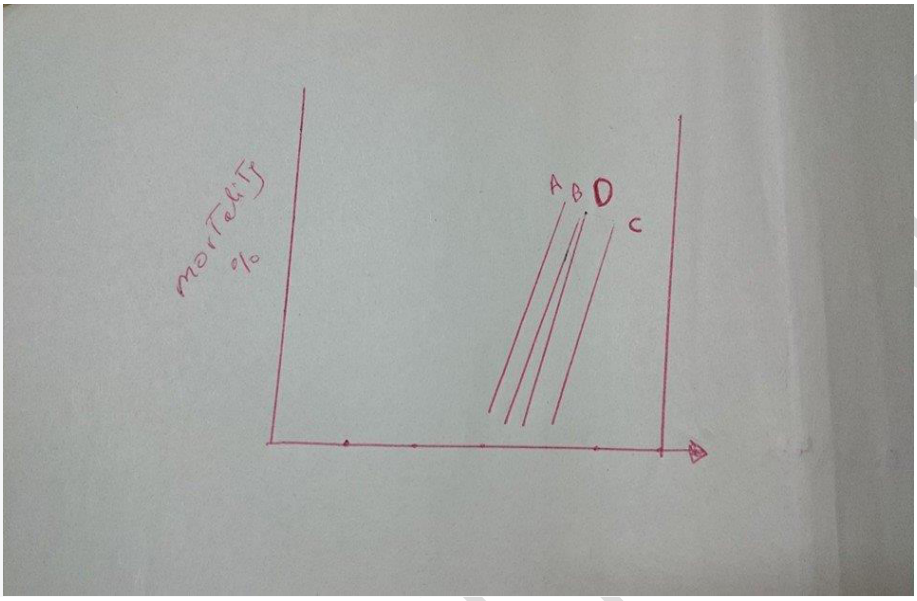
Figure 1. Determination of bioavailability of a drug
AUC = area under the curve

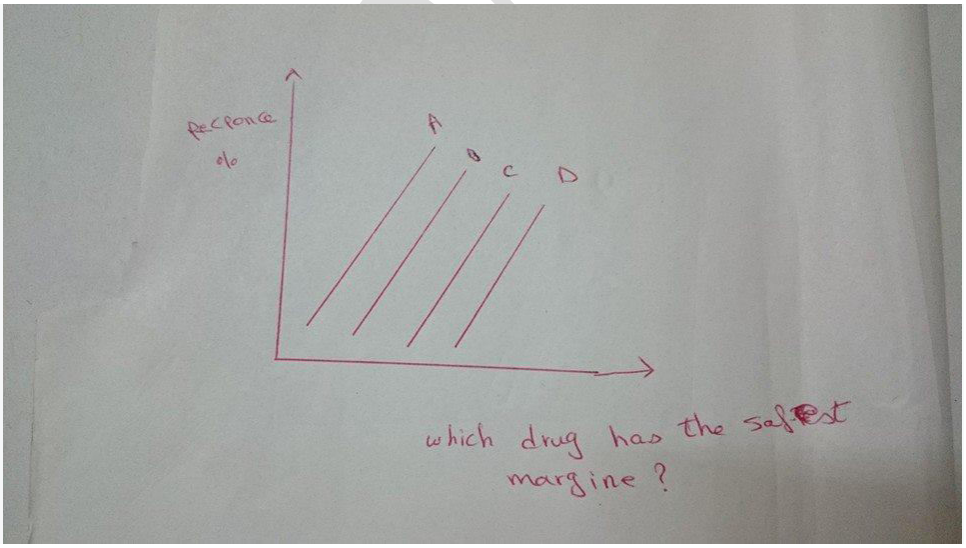
***

77.Which drug of the following has the safest margine ?

1.A … 2.B … 3.C … 4.D

N.B : safest margine = higher therapeutic index





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Summary of the important problems :

1.Molarity of 17.52 NaCl solution : **0.15**

2.Cold cream with two concentrations : **20gm from 1% and 40gm from 2.5%**

3.Cold cream ((how many ml uses)) : **20 ml**

4.Ca correvted to albumin : **2.3**

5.Osmolarity of NaCl : **1026**

6.AUC bioavailability ((112, 500)) : **25%**

7.AUC bioavailability ((300, 225)) : **75%**

8.Levofloxacin : **10 ml**

9. Omeprazol : **7 cap.**

10.Crcl of Male, 40 y, 80 kg with Scr: 0.5 mg/dL: **222ml/min**

11.the same problem but for female : **189ml/min**

12.Heparin bag : **7 ml**

13.Captopril : **16 tablets**

14.Clindamycin : **45**

15. Plasma Osmolarity : **263**

16.Paracetamol : **7.5 ml**

17 .gm of water add to 5% KCL ((w/w)) : **95 gm**

***

Don't Forget to Study the other Files (Cases &Pharma Questions)

Good luck ☺