REFERENCE GUIDE FOR PHARMACEUTICAL CALCULATIONS

THIRD EDITION 2008 - 2009

MANAN SHROFF

This reference guide is not intended as a substitute for the advice of a physician. Students or readers must consult their physician about any existing problem. Do not use any information of this reference guide for any kind of self treatment. Do not administer any dose of mentioned drugs in this reference guide without consulting your physician. This is only a review guide for preparation of pharmaceutical calculations.

The author of this reference guide is not responsible for any kind of misinterpreted, incorrect or misleading information or any typographical errors in this guide. Any doubtful or questionable answers should be checked in other available reference sources.

RXEXAM® *is a registered trademark of* ***Pharmacy Exam of Krishna Publication inc****. Any unauthorized use of this trade mark will be considered a violation of law.*

PREFACE

Reference guide for Pharmaceutical calculations is a resourceful practice guide for preparation of the NAPLEX®, FPGEE® , California Pharmacy Board Exam and PTCB® exams.

It contains more than 600 calculation problems to prepare students to tackle an actual exam.

NAPLEX®, FPGEE®, California Pharmacy Board Exam and PTCB® exams are currently putting more emphasis on calculation problems. 25 % to 30% of NAPLEX®, FPGEE®, California Pharmacy Board Exam and PTCB® exams consist of calculations.

Calculations related to I.V., I.V. infusion, TPN and dosages are very important in retail and institutional pharmacy settings. This guide will provide complete practice on related calculation problems and help to achieve an exceptional score on the examinations.

Best of luck,

Manan Shroff

TABLE OF CONTENTS

SECTION - I

SECTION - II

COMMONLY USED UNITS FOR PHARMACEUTICAL CALCULATIONS

*	1 kilogram	=	1000 grams				
*	1 gram	=	1000 milligrams				
*	1 milligram	=	1000 micrograms				
*	1 microgram	=	0.001 milligrams				
*	1 microgram	=	10^{-6} grams				
*	1 nanogram	=	10^{-9} grams				
*	1 grain	=	65 milligrams				
*	1 liter	=	1000 cc				
*	1 ounce (oz)	=	30 cc				
*	16 ounce (oz)	=	480 cc	=	1 pint		
*	1 pint	=	480 cc				
*	1 quart	=	960 cc	=	2 pints		
*	1 gallon	=	3840 cc	=	8 pints	=	4 quarts
*	1 kg	=	2.2 lbs				
*	1 lb	=	454 grams				
*	1 teaspoonful	=	5 cc				
*	1 tablespoonful	=	15 cc				
*	1 teacupful	=	120 cc				
*	Density	=	weight/volume				
*	Proof gallon	=	(gal x % v/v strength) / 50% v/v				
*	% strength	=	proof spirit / 2				
*	Proof gal	=	(gal x proof spirit) / 100				
*	PV	=	nRT				
*	PV	=	W/M x R x T				
*	Equivalent wt	=	molecular weight / number of valence				
*	mEq	=	equivalent weight in mg / 1000				
*	mOsmol/L	=	(weight of substance [g/L] x no of species x 1000) / mol wt				
*	pH	=	pKa + log (salt/acid)				
*	Young (child)	=	(age in years / age + 12) x adult dose				
*	Clark's	=	(weight in lbs / 150) x adult dose				
*	Child's dose	=	(body surface area of child / 173 mm^2) x adult dose				
*	Fried's rule	=	(age in months / 150) x adult dose				
*	FP of blood	=	-0.52°C				

*	Each gm of hydrous dextrose provides	=	3.4 calories / kcal
*	Each gm of anhydrous dextrose provides	=	4 calories / kcal
*	Each gm of fat provides	=	9 calories / kcal
*	Each gm of protein/aminoacid provides	=	4 calories / kcal
*	Each gm of medium chain triglyceride (mct)	=	8.3 calories / kcal
*	Each gm of glycerol provides	=	4.3 calories / kcal
*	Each cc of alcohol provides	=	5.6 calories / kcal
*	1 cc of 10% fat emulsion provides	=	1.1 calories / kcal
*	1 cc of 20% fat emulsion provides	=	2.0 calories / kcal

* pH = pKa + log (salt/acid) or (ionized/unionized) (for weak acid)
* pH = pKw - pKb + log (base/salt) (for weak base)

* $B = \frac{2.3 \times C \quad Ka \times H_3O^+}{(Ka + H_3O^+)^2}$ (Van slyke's buffer capacity equation)

where, C = total buffer concentration, H_3O^+ = hydrogen ion concentration

* $B_{max} = 0.576 \times C$ (maximum buffer capacity)

where C = total buffer concentration

* Acceleration gravity (g) = 980 cm/sec^2
* Gas constant (R) = 0.082 lit atm / mole deg
* 1 calorie = 4.184×10^7 erg
* Avogrado's number = 6.0221×10^{23} $mole^-$

* $K = \frac{2.303}{t} \log \frac{Co}{C}$ where Co = initial concentration of drug
where C = concentration of drug at time 't'

* $t_{1/2} = 0.693/K$ where $t_{1/2}$ = half life of drug
where K = rate constant

* $V_d = M/C_p$ where V_d = volume of distribution
where M = amount of drug in body
where C_p = plasma concentration of drug

* $R_i = Css \times Vd \times K$ where R_i = rate of infusion
where Css = steady state plasma concentration
where Vd = volume of distribution
where K = drug elimination constant

* $L_d = Css \times V_d$ where L_d = loading dose of drug
where Css = steady state plasma concentration
where V_d = volume of distribution

* Normality (N): It is defined as the presence of number of gram equivalent weight of solute in 1000 ml or (1L) solution.

* Molarity (M): It is defined as the presence of number of moles of solute in 1000 ml or (1L) of solution.

* Molality (m): It is defined as the presence of number of moles of solute in 1000 gm of solvent.

* Temperature conversion: $9\ (^{o}C) = 5\ (^{o}F) - 160$

* $$CrCl = \frac{\text{weight (kg) x (140-age)}}{\text{72 x serum creatinine (mg/dL)}}$$

* CrCl (female) =0.85 x male (CrCl)

* $$\text{The number of vials of Digibind required} = \frac{\text{Total digitalis body load in mg x 0.8}}{\text{0.5mg of digitalis bound}}$$

QUESTIONS

1. Sulfur 3%
Salicylic acid 3%
White Petrolatum.....q.s. 80 gm

Find out the amount of Sulfur required to fill the above prescription?

a. 1.2 gm
b. 2.4 gm
c. 3.0 gm
d. 4.8 gm

2. How many grams of Dextrose are required to prepare 5% of 500 cc solution?

a. 2.5 gm
b. 25 gm
c. 55 gm
d. 5 gm

3. How much Lidocaine is required to prepare 1 : 1000, 30 cc of solution of Lidocaine?

a. 10 mg
b. 0.03 mg
c. 30 mg
d. 300 mg

4. How many milligrams are equal to 1/150 gr of Nitroglycerine?

a. 150 mg
b. 65 mg
c. 55 mg
d. 0.43 mg

5. How much Atropine is required to dispense 1 quart of 1 in 100 solution?

a. 9.6 mg
b. 1.48 gm
c. 2.3 mg
d. 9600 mg

6. How many cc of 75% alcohol should be mixed with 10% of 1000 cc alcohol to prepare 30% of 500 cc alcohol solution ?

a. 346.16 cc
b. 234.43 cc
c. 153.84 cc
d. 121.12 cc

7. How many grams of Heparin are required to prepare 1 quart of 0.45% solution?

a. 2.16 gm
b. 4.32 gm
c. 0.45 gm
d. 4.5 gm

8. If a prescription reads "Augmentin 875 mg po bid x 10 days," how many cc of Augmentin 250 mg/5 cc are required to fill a ten-day supply?

a. 350 cc
b. 35 cc
c. 17.5 cc
d. 5 cc

9. If 250 mg of Cefazolin powder are diluted with water up to the 250 cc mark, what is the % of drug in the final solution ?

a. 10%
b. 0.1%
c. 11%
d. 0.01%

10. If 1 teaspoonful of Thioridazine concentrated solution (30 mg/cc) is diluted up to the 480 cc mark with plain water, what is the strength of drug in mg/ml in the final solution ?

a. 1mg/cc
b. 0.52 mg/cc

c. 0.31 mg/cc
d. 0.75 mg/cc

11. If a prescription reads "Diphenhydramine 50 mg po hs x 30 days ", what would be the dispensed quantity of drug in ml (12.5 mg / 5 cc) for thirty-day supply?

a. 20 cc
b. 5 cc
c. 300 cc
d. 600 cc

12. Erythromycin 2% 60 cc topical solution contains:

a. 2 gm erythromycin
b. 2.4 gm erythromycin
c. 0.6 gm erythromycin
d. 1.2 gm erythromycin

13. If 60 mg of elementary iron are present in 325 mg of ferrous sulfate, what is the % of elementary iron?

a. 20.00%
b. 10.25%
c. 18.46%
d. 9.25%

14. If 60 gm of 1% hydrocortisone are mixed with 80 gm of 2.5% hydrocortisone, what is the % of hydrocortisone in the final mixture?

a. 2.2% w/w
b. 1.85% w/w
c. 0.25% w/w
d. 1.75% w/w

15. If a prescription reads "100 mcg cyanocobalamin i.m. every week", how many ampuls of 1000 mcg / cc are required to fill a month supply?

a. 4
b. 3
c. 1
d. 2

16. If 1000 tablets of Risperdal 1 mg cost $2250 and the mark-up on prescription is 20%, what would be the retail price for 30 tablets?

a. $150
b. $17
c. $500
d. $81

17. How much Clobetasole is present in 60 gm of 0.5% ointment?

a. 1.2 gm
b. 3.0 gm
c. 2.1 gm
d. 0.3 gm

18. If the ratio of ionized to unionized species of drugs is 10^3 and PKa = 2.2, what is the pH of the solution?

a. 2.2
b. 0.8
c. 5.2
d. 3.0

19. If a prescription reads "Augmentin 875 mg by mouth twice a day", how many cc of Augmentin 400 mg/5 cc are required to dispense a 10 day supply?

a. 10.93 cc
b. 218.75 cc
c. 75.00 cc
d. 100.00 cc

20. Find out the weight in gm of 500 cc glycerine. [Specific gravity = 1.25 gm/ml]

a. 625 gm
b. 50 gm
c. 400 gm
d. 0.25 gm

21. Find out the volume of 5 lb of glycerine. [density = 1.25 gm/ml]

a. 1816 cc
b. 6.25 cc
c. 637 cc
d. 40 cc

22. Calculate the weight of 500 cc of acid. [density of acid = 2.5 gm/ml]

a. 1000 gm
b. 1250 gm
c. 500 gm
d. 200 gm

23. Find out the ratio of ionized to unionized species of drugs at pH = 7. [pKa = 5]

a. 10
b. 1
c. 100
d. 1000

24. If the pH of the solution is 3, what is the concentration of H_3O^+ in gm ion /L?

a. 0.01 gm-ion/L
b. 1×10^3 gm-ion/L
c. 0.05 gm-ion/L
d. 10^{-3} gm-ion/L

25. What is the pH of a solution having a ratio of ionized to unionized species of drugs of 1×10^{-6} ?[PKa = 7]

a. 2
b. 5
c. 3
d. 1

26. How many 500 mg tablets of erythromycin are required to prepare 240 cc of 2% solution of erythromycin?

a. 3
b. 5
c. 6
d. 10

27. How many milligrams are equal to 1/150 grains?

a. 0.65 mg
b. 1.21 mg
c. 0.43 mg
d. 1.56 mg

28. How many 975 mg tablets of aspirin are required to prepare 100 tablets of 1 grain?

a. 6 tablets
b. 10 tablets
c. 5 tablets
d. 3 tablets

29. If 3 capsules of 150 mg of Clindamycin are added to 150 cc of 1% Cleocin topical solution, what is the % of Clindamycin in the final mixture ?

a. 1.5%
b. 1.3%
c. 1.1%
d. 0.9%

30. The adult dose of a drug is 500 mg. What is the dose for a 2 year old child?
[use young rule]

a. 71.42 mg
b. 101.53 mg
c. 25.46 mg
d. 31.18 mg

31. The adult dose of a drug is 750 mg, what is the dose for child weighing 20 lbs?

a. 100 mg
b. 250 mg
c. 500 mg
d. 425 mg

32. If a dropper is calibrated to deliver 325 mg of iron sulfate in 0.6 cc and an adult dose of drug is 325 mg, what is the dose of a drug in cc for a 15 month old infant?

a. 1.2 cc
b. 0.3 cc
c. 0.06 cc
d. 0.01 cc

33. If an adult dose of a drug is 100 mg, what would be the dose for a child having a body surface area of 20 mm^2 ?

a. 5.51 mg
b. 12.32 mg
c. 20.60 mg
d. 11.56 mg

34. How many milligrams are in 10 grains of aspirin?

a. 81 mg
b. 60 mg
c. 325 mg
d. 650 mg

35. If a normal dose of a drug is 10 mg/kg/day, how many 250 mg/100cc ready-infusion bags are required to fill the above order ? [Patient's weight is 156 lbs.]

a. 1 bag
b. 2 bags
c. 3 bags
d. 5 bags

36. If the prescription calls for "50 micrograms of a drug three times daily for 10 days", how many 1/100 grain tablets are required to fill the above order ?

a. 5 tablets
b. 3 tablets
c. 1 tablet
d. 6 tablets

37. If a prescription reads "Lanoxin 0.125 mg by mouth every day", how many cc of Lanoxin 50 mcg/cc are required to dispense a 30 day supply?

a. 75 cc
b. 50 cc
c. 100 cc
d. 240 cc

38. If a prescription reads to dissolve 2 gm of guaifenesin in 100 cc of water, how many grains of guaifenesin are present in 1 teaspoonful of solution?

a. 1.53 grains
b. 2.61 grains
c. 3.15 grains
d. 4.20 grains

39. If 100 mg of Lactin is equal to 4500 units, how many milligrams are required to obtain 1 unit?

a. 2.22 mg
b. 0.02 mg
c. 3.25 mg
d. 4.50 mg

40. If a prescription reads "Ampicillin 50 mg by mouth twice a day" for a 7 year old child, how many cc (125 mg/5 cc) are required to dispense a 7 day supply of the drug?

a. 150 cc
b. 240 cc
c. 28 cc
d. 56 cc

41. What is the dose of a drug for a person having 110 m^2 body surface area? The average adult dose of the drug is 750 mg.

a. 1089 mg
b. 625 mg
c. 531 mg
d. 477 mg

42. How many grams of a drug are required to prepare 240 cc of 10% solution?

a. 12 gm
b. 36 gm
c. 48 gm
d. 24 gm

43. How many grams of sodium chloride are required to make 750 cc of 0.9% normal saline solution?

a. 1.35 gm
b. 2.50 gm
c. 6.75 gm
d. 12.25 gm

44. How many grams of dextrose are present in 500 cc of $D_{25}W$ solution?

a. 50 grams
b. 125 grams
c. 75 grams
d. 25 grams

45. How much Lidocaine is required to prepare 30 cc of 1:1000 solution?

a. 30 mg
b. 0.03 mg
c. 0.003 mg
d. 300 mg

46. How much Povidone-Iodine is required to prepare 1000 cc of 1 in 750 solution?

a. 1.33 gm
b. 3.12 gm
c. 1.25 gm
d. 0.95 gm

47. How many grams of dextrose are needed to prepare 5L of 1 in 250 solution?
a. 75 gm
b. 20 gm
c. 80 gm
d. 51 gm

48. What is the % of boric acid in 1 in 20 solution?

a. 0.5%
b. 2.5%
c. 5.0%
d. 7.5%

49. To dispense 5% of 250 cc solution of thioridazine, how many cc of 30 mg/cc are required?

a. 225 cc
b. 153 cc
c. 511 cc
d. 417 cc

50. If 20 cc of risperdal 1mg/cc are diluted with water up to 240 cc mark, what would be the strength of drug in mg /ml?

a. 2.2 mg/cc
b. 1 mg/cc
c. 0.1 mg /cc
d. 0.08 mg/cc

250. How much dextrose is required to prepare 1 in 100, 50 cc dextrose solution?

a. 0.5 gm
b. 2 gm
c. 1.5 gm
d. 3.6 gm

251. How many milliequivalents of sodium are present in a 5% 1 pint sodium bicarbonate solution? [MW = 84 gm/mole]

a. 121.58
b. 312.54
c. 285.71
d. 243.20

252. If the serum creatinine value for Joseph is 3.7mg/dl, what would be the creatinine clearance value in ml/min? (Patient's age = 52 years; Weight = 185lbs.)

a. 56.6 ml/min
b. 70.1 ml/min
c. 98.5 ml/min
d. 27.78 ml/min

253. If the recommended dose of a drug (2mcg/ml) is 0.01 mcg/kg four times weekly, approximately how many ampules are required to fill a week supply? (Patient's weight = 110 lbs.)

a. 9
b. 7
c. 1
d. 5

254. If the recommended dose of Reclast (5mg/ml) is 0.25 mcg/kg/min, how long will it take to finish up 2.5mg/ml? (Patient's weight = 110 lbs.)

a. 4 hrs
b. 5 hrs
c. 10 hrs
d. 6 hrs

255. Five packs of K-Lor powder (8mEq of KCl) should dissolve in 12oz of water. If 5cc of this resultant solution is diluted up to the 25cc mark with plain water, what would be the final concentration of KCl in mg/cc? (K = 39, Cl = 35.5)

a. 3.15
b. 1.51
c. 1.27
d.1 1.64

256. If a prescription reads 400mg of Ritonavir daily, how many cc of Kaletra (80mg/20mg per ml) oral solution are required to fill a 7-day supply?

a. 180cc
b. 140cc
c. 530cc
d. 215cc

257. If 1cc of Ensure provides 1 calorie, how many 8 ounce bottles of Ensure are required to provide 0.1Kcal?

a. 6
b. 1
c. 9
d. 2

258. How many milligrams of Atenolol is present in each ml of a 0.015% eye drop?

a. 1.25
b. 0.15
c. 5.45
d. 2.21

259. Floxin eye drops are available as a 0.0002% ophthalamic solution. How many milligrams of drug is present in each ml of solution?

a. 0.526
b. 2.5
c. 0.125
d. 0.002

260. The recommended dose of Rhinocort aqua nasal spray is 32mcg daily as one spray per nostril. If nasal spray provides 40 sprays (each with 16mcg) after initial priming, how many days will this nasal spray last?

a. 10
b. 30
c. 60
d. 5

261. Below is a table showing the Primaxin IV dosage schedule for adults with impaired renal function:

CrCl(ml/min)	Dose	Dosing Interval
26 to 50	1000mg	every 12 hours
10-25	500mg	every 12 hours
< 10	500mg	every 24 hours

If the serum creatinine concentration of a 31-year-old female patient is 3.9 mg/dl, what would be the recommended daily dose of Primaxin IV in milligrams? (Weight = 85 lbs.)

a. 250
b. 500
c. 750
d. 1000

262. If the standard infusion rate of Primacor is 0.25mg/kg/hr, how many ml per minute will be administered to a patient weighing 110 lbs? (Primacor 250ml infusion bag 0.2 mg/ml)

a. 1.21
b. 2.65
c. 0.56
d. 1.04

263. A digoxin potency in elixir dosage form is 80% compared to digoxin I.V. dosage formulations. If a prescription says 5ml (25mcg/ml) per day, what would be an equivalent dose of the drug in milligrams for I.V. dosage form?

a. 0.25
b. 0.125
c. 0.1
d. 0.75

264. Each 8-ounce Ensure Plus labeling provides the following information:

Amount per serving	**%DV**
Total fat (11gm)	17%
Saturated fat (1gm)	5%
Trans fat (0gm)	
Cholesterol (< 5mg)	< 2%
Sodium (240mg)	10%
Potassium (500mg)	14%
Protein (13gm)	26%
Carbohydrate (50gm)	17%
Sugar (18gm)	

How many total fat calories will be provided by Ensure Plus if the patient is drinking 1000ml per day?

a. 101
b. 143
c. 243
d. 413

265. Each 8-ounce Ensure Plus labeling provides the following information:

Amount/serving	**%DV**	**Serving Size**
Total fat (11gm)	17%	(8 fl oz)
Saturated fat (1gm)	5%	(350 calories)
Trans fat (0gm)		
Cholesterol (< 5mg)	< 2%	
Sodium (240mg)	10%	
Potassium (500mg)	14%	
Protein (13gm)	26%	
Carbohydrate (50gm)	17%	
Sugar (18gm)		

A normal adult requires 2100 calories per day from their diet. If they are getting all these calories from Ensure Plus, how many protein calories will they get per day?

a. 110
b. 234
c. 312
d. 52

266. Each 8-ounce Ensure Plus labeling provides the following information:

Amount/serving	**%DV**	**Serving Size**
Total fat (11gm)	17%	(8 fl oz)
Saturated fat (1gm)	5%	(350 calories)
Trans fat (0gm)		
Cholesterol (< 5mg)	< 2%	
Sodium (240mg)	10%	
Potassium (500mg)	14%	
Protein (13gm)	26%	
Carbohydrate (50gm)	17%	
Sugar (18gm)		

How many mEqs of potassium will be present in 720cc of Ensure Plus? (K = 39, Cl = 35)

a. 39
b. 56
c. 31
d. 13

267. Each 8-ounce Ensure Plus labeling provides the following information:

Amount/serving	**%DV**	**Serving Size**
Total fat (11gm)	17%	(8 fl oz)
Saturated fat (1gm)	5%	(350 calories)
Trans fat (0gm)		
Cholesterol (< 5mg)	< 2%	
Sodium (240mg)	10%	
Potassium (500mg)	14%	
Protein (13gm)	26%	
Carbohydrate (50gm)	17%	
Sugar (18gm)		

W.H.O. recommends 0.45 grams of protein per kilogram of ideal body weight per day. How many bottles of Ensure Plus are required daily for a person weighing 110 lbs?

a. 2
b. 5
c. 7
d. 9

268. Each 8-ounce Ensure Plus labeling provides the following information:

Amount/serving	**%DV**	**Serving Size**
Total fat (11gm)	17%	(8 fl oz)
Saturated fat (1gm)	5%	(350 calories)
Trans fat (0gm)		
Cholesterol (< 5mg)	< 2%	
Sodium (240mg)	10%	
Potassium (500mg)	14%	
Protein (13gm)	26%	
Carbohydrate (50gm)	17%	
Sugar (18gm)		

ANSWERS

1. (b) 2.4 grams.

The amount of sulfur required to fill the above prescription is $\frac{80 \times 3}{100}$ = 2.4 grams.

2. (b) 500 cc of 5% Dextrose solution contains:
$\frac{500 \times 5}{100}$ = 25 grams of dextrose.

3. (c) 1: 1000 is generally interpreted as 1 gm in 1000 cc of solution. The amount of lidocaine in 30 cc of 1:1000 solution can be calculated as follows:

= $\frac{30 \times 1}{1000}$ = 0.03 gm = 30 milligrams.

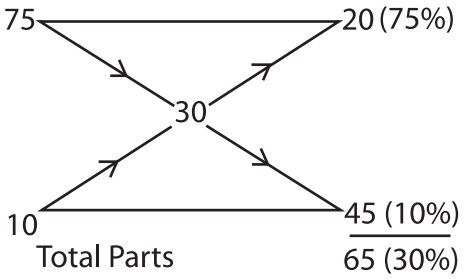
4. (d) 1 grain is equal to 65 milligrams, therefore 1/150 grains are equal to:

= $\frac{1 \times 65}{150}$ = 0.43 milligrams

5. (d) 1 in 100 solution is interpreted as 1 gm of drug in 100 cc of solution. We want to find out how much atropine is required to dispense 1 quart (960 cc) of 1 in 100 solution, therefore:

= $\frac{960 \times 1}{100}$ = 9.6 gm atropine = 9600 mg.

6. (c) To solve this type of problem, we need to use the alligation method.



To prepare 65 (30%) 20 parts (75%) needed
To prepare 500 (30%) ?

= $\frac{500 \times 20}{65}$ = 153.84 cc (75%) alcohol

If we mixed 153.84 cc of 75% alcohol with 346.16 cc [500 cc - 153.84 cc] of 10% alcohol, then we can get 500 cc of 30% alcohol solution.

7. (b) We want to prepare 1 quart (960 cc) of 0.45% heparin solution, therefore we can say

= $\frac{960 \times 0.45}{100}$ = 4.32 gm.

4.32 gms of heparin are required.

8. (a) This type of calculation is classified as a dosage calculation and can be calculated as follows:

We have a suspension of Augmentin 250 mg/5 cc and we want to dispense dose of 875 mg,

= $\frac{5 \times 875}{250}$ = 17.5 cc

The patient is taking 875 mg twice a day and therefore:

= 2 x 17.5 cc = 35 cc per day.

Patient is taking drug for 10 days therefore,

= 35 x 10 = 350 cc would be the dispensed quantity of drug.

9. (b) 250 mg (0.25 gm) of cefazolin powder are diluted with water up to 250 cc mark and we want to find out the % of drug in the final solution.
= $\frac{100 \times 0.25}{250}$ = 0.1%

10. (c) 1 teaspoonful (5 cc) of Thioridazine solution (30mg/cc) contains 150 mg of drug. This solution is diluted up to a mark of 480 cc therefore:

$= \frac{150}{480} = 0.31$ mg/ml

11. (d) We have 12.5mg/5cc Benadryl solution. We want to dispense a 50 mg dose:

$= \frac{50 \times 5}{12.5} = 20$ cc for 1 day

For 30 day supply:

$= 20 \times 30 = 600$ cc.

12. (d) Erythromycin 2% topical solution contains $= \frac{60 \times 2}{100}$

= 1.2 gm of erythromycin.

13. (c) The % of elementary iron can be found as follows:

$= \frac{100 \times 60}{325} = 18.46\%$

14. (b) The amount of Hydrocortisone in 60 gm, 1%:

$\frac{60}{100} = 0.6$ gm of hydrocortisone.

Amount of hydrocortisone in 80 gm, 2.5%

$\frac{80 \times 2.5}{100} = 2$ gm hydrocortisone

% of hydrocortisone in final mixture

$= \frac{100 \times 2.6 \text{ (2 gm + 0.6 gm)}}{140 \text{ (80 gm + 60 gm)}}$

= 1.85% w/w.

15. (c) 1 ampul

Patient is taking 100 mcg of the drug I.M. every week, therefore:

$= \frac{100}{1000} = 0.1$ cc of drug every week.

The number of cc required for a 1 month supply:

$= 0.1 \times 4 = 0.4$ cc

The correct answer should be 1 ampul.

16. (d) 1000 tablets of Risperdal 1mg cost $2250. The % mark up on prescriptions is 20%.
Therefore the retail price of 1000 tablets would be:

$= \frac{120 \times 2250}{100} = \$2700$

** Each $100 cost = $120 retail cost**

Price for 30 tablets would be:

$= \frac{30 \times 2700}{1000} = \$81$

17. (d) We want to find out the quantity of Clobetasole present in 60 grams of 0.5% ointment.

$= \frac{60 \times 0.5}{100} = 0.3$ gm of clobetasole.

18. (c) A pH of the solution can be found by the following formula:

$pH = pKa + \log \frac{\text{ionize}}{\text{unionize}}$

$= 2.2 + \log 10^3$
$= 2.2 + 3$
$= 5.2$

19. (b) We have 400 mg/5 cc Augmentin in stock. We want to find the dispensed quantity for a 10-day supply.

$= \frac{875 \times 5}{400} = 10.93$ cc for each dose

The patient is taking a dose twice a day for 10 days therefore :
$= 10.93 \times 2 \times 10$
$= 218.75$cc

20. (a) Weight in grams = no of ml x sp gr

$= 500$ cc $\times 1.25$ gm/cc
$= 625$ gm

21. (a) Weight = density x volume

$\text{Volume} = \frac{\text{weight}}{\text{density}}$

$= \frac{5 \times 454}{1.25}$ (1 lb = 454 gm)

= 1816 cc glycerine.

22. (b) Weight = density x volume

$= 2.5 \times 500$
= 1250 gm of acid.

23. (c) $pH = pKa + \log \frac{\text{salt}}{\text{acid}}$

$7 = 5 + \log \frac{\text{salt}}{\text{acid}}$
$\log [\text{salt/acid}] = 2$

salt/acid = 10^2, ratio of ionized to unionize drug will be 100.

24. (d) $pH = -\log [H_3O^+]$

$3 = -\log [H_3O^+]$
$-3 = \log [H_3O^+]$

$[H_3O^+] = 10^{-3}$ gm ion/L

25. (d) $pH = pKa + \log [\text{salt/acid}]$

$pH = 7 + \log[10^{-6}]$
$= 7 - 6$
$= 1$

26. (d) 240 cc 2% Erythromycin solution contains:

$= \frac{240 \times 2}{100} = 4.8$ gm of Erythromycin

The number of 500 mg tablets of Erythromycin:

$= \frac{4800}{500} = 9.6 \cong 10$ tablets.

27. (c) 1 grain is equal to 65 mg therefore:1/150 grains will contain:

$= \frac{1 \times 65}{150} = 0.43$ mg

28. (a) 100 tablets of 1grain of Aspirin contains: $100 \times 65 = 6500$ mg of Aspirin.

The number of 975 mg tablets of Aspirin:

$= \frac{6500}{975} = 6.66 \cong 6$ tablets

29. (b) 1 % 150 cc Cleocin solution contains:

$= \frac{150 \times 1}{100} = 1.5$ gm Clindamycin

The addition of 3 capsules each weighing 150 mg will result in: 1.5 gm + 0.45 gm = 1.95 gm

% of Clindamycin in final mixture would be:

$$= \frac{1.95 \times 100}{150} = 1.3\%$$

30. (a) 71.42 mg

Young rule = $\frac{\text{age in year}}{\text{age} + 12} \times$ adult dose

$$= \frac{2}{14} \times 500 = 71.42 \text{ mg}$$

31. (a) 100 mg

Clark's rule = $\frac{\text{Weight in lbs x adult dose}}{150}$

$$= \frac{20 \times 750}{150} = 100 \text{ mg}$$

32. (c) 0.06 cc

According to Fried's rule:

$$= \frac{\text{age in months}}{150} \times \text{adult dose}$$

$$= \frac{15 \times 325}{150} = 32.5 \text{ mg}$$

The dropper is calibrated to deliver 325 mg of Iron sulfate in 0.6 cc, therefore:

$$= \frac{0.6 \times 32.5}{325} = 0.06\text{cc}$$

33. (d) 11.56 mg

A child dose can be calculated by:

$$= \frac{\text{Body surface area of child x adult dose}}{173 \text{ mm}^2}$$

$$= \frac{20 \times 100}{173}$$

$$= 11.56 \text{ mg}$$

34. (d) 1 grain is equal to 65 mg, therefore 10 grains contain

$$= 10 \times 65 = 650 \text{ mg of the drug.}$$

35. (c) Patient weight is 156 lbs, therefore weight in Kg would be $\frac{156}{2.2} = 70.9$ kg.

A normal therapeutically recommended dose of drug is 10mg/kg/day, therefore the dose in the above patient is:

$$= 10 \times 70.9$$
$$= 709 \text{ mg}$$

Each ready-infusion-bag contains 250 mg of drug, so the number of bags required to fill the order would be

$$= \frac{709}{250} = 2.83 \cong 3 \text{ bags.}$$

36. (b) 1/100 grains contains:

$$= \frac{1 \times 65 \times 1000}{100} \quad [1 \text{ mg} = 1000 \text{ mcg}]$$
$$= 650 \text{ micrograms}$$

A prescription calls for 50 mcg of a drug three times a day for 10 days, therefore the number of tablets required to fill the order is:

$$= \frac{50 \times 3 \times 10}{650} = 2.30 \cong 3 \text{ tablets}$$

37. (a) A patient is taking 125 mcg of Lanoxin every day, therefore to fill a 30 day order,

= 30 x 125 = 3750 mcg of Lanoxin.

Each ml of Lanoxin elixir provides 50 mcg of a drug, therefore the number of cc required to fill the entire order is:

$= \frac{3750}{50} = 75$ cc of Lanoxin elixir.

38. (a) A prescription reads to dissolve 2 gm of Guaifenesin in 100 cc of plain water, therefore the amount of drug present in 1 teaspoonful (5 cc) of solution would be

$= \frac{5 \times 2000}{100} = 100 \text{ mg} = \frac{100}{65} = 1.53$ grain

39. (b)

100 mg of Lactaid is equal to 4500 units, therefore 1 unit is equal to:

$= \frac{100}{4500} = 0.02$ mg of Lactaid

40. (c) 28 cc

A 7 year-old child is taking 50 mg Ampicillin by mouth twice a day for 7 days, therefore:

= 50 x 2 x 7
= 700 mg of Ampicillin

We have 125 mg/5 cc suspension in stock:

$= \frac{5 \times 700}{125} = 28$ cc

41. (d) 477 mg

An adult dose of drug can be calculated by the following formula:

$\frac{\text{Body surface area}}{173 \text{ mm}^2} \times \text{adult dose}$

$= \frac{110}{173} \times 750 = 476.87 \text{ mg} \cong 477 \text{ mg}$

42. (d) 240cc of 10% solution will contain:

$= \frac{240 \times 10}{100} = 24$ gm of drug.

43. (c) 6.75 gm sodium chloride

The amount of sodium chloride required:

$= \frac{750 \times 0.9}{100} = 6.75$ gm of sodium chloride

44. (b) $D_{25}W$ will be interpreted as 25% Dextrose solution.

The amount of dextrose present:

$= \frac{500 \times 25}{100} = 125$ gm of dextrose.

45. (a) 1 : 1000 solution is interpreted as 1 gm of drug in 1000 cc of solution.

The amount of Lidocaine required:

$= \frac{30 \times 1}{1000} = 0.03 \text{ gm} = 30 \text{ mg}$ of Lidocaine

46. (a) 1.33 gm of Povidone-Iodine.

The amount of Povidone-Iodine required:

$= \frac{1000}{750} = 1.33$ gm of povidone iodine

47. (b) 20 gm of dextrose

The amount of dextrose required:

$= \frac{5000 \times 1}{250} = 20$ gm of dextrose

48. (c) 1 in 20 solution is interpreted as 1 gm of drug in 20 cc solution.

$= \frac{100 \times 1}{20} = 5\%$ boric acid.

49. (d) An amount of thioridazine required:

$= \frac{250 \times 5}{100} = 12.5$ gm of drug = 12,500 mg

Stock solution of thioridazine required:

$= \frac{12{,}500}{30} = 416.66 \text{ cc} \cong 417 \text{ cc}$

50. (d) 20 cc of 1 mg/cc Risperdal solution contains 20 mg of drug.

Strength of Risperdal in the final solution:

$= \frac{20}{240} = 0.08$ mg /cc

51. (c) To solve this problem we can use the ratio-proportion method.

$V_1 C_1 = V_2 C_2$

$V1 = \frac{750 \times 0.2}{0.7} = 214.3$ cc of 70% alcohol

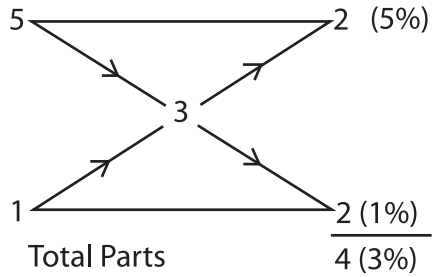
52. (b) 1 in 500 solution is interpreted as 1 gm of drug in 500 cc solution, therefore:

$= \frac{3 \times 960 \times 1}{500} = 5.76$ gm of Atropine.

53. (a) 50 grams.

$= \frac{500 \times 10}{100} = 50$ grams of Povidone Iodine

54. (a) To solve this problem, we can use the alligation method.



To prepare 4 parts (3%) 2 parts (5%)
To prepare 500 gm ?

$= \frac{500 \times 2}{4} = 250$ gm of 5% salicylic acid.

55. (b) To solve this problem, we must first find out the amount of drug present in the final solution.

The amount of atropine in 1 pint, 1 in 500 sol[n]

$= \frac{480 \times 1}{500} = 0.96$ gm of atropine.

Now, 0.96 gm of drug must be present in 1 teaspoonful of the drug solution, therefore we can say:

This 150 mg will be present in 240 cc of solution therefore:

= 150 mg/240 cc
= 0.625 mg/cc

10 cc (6.25 mg) of this resultant solution is diluted up to 1000 cc:

= 6.25 mg/1000 cc
= 0.00625 mg/cc = 6.25 mcg/cc

243. (b) 307.69 mOsm

$$\text{mOsml/L} = \frac{\text{wt (g)/L x no. of species x 1000}}{\text{mw (g)}}$$

Amount of NaCl:

= 200 x 0.009 gm
= 1.8 gm/200 cc
= 9 gm/1000 cc
$= \frac{9 \times 2 \times 1000}{58.5}$
= 307.69 mOsm/L

244. (c) 2684.56 mOsm/L

Amount of KCl:

= 30 x 0.1
= 3 gm KCl/30 cc
= 10 gm/100 cc
= 100 gm/1000 cc

mOsm/L of KCl:

$= \frac{100 \times 2 \times 1000}{74.5}$

= 2684.56 mOsm/L

245. (d) 2.77 drops/min

We have to infuse 100 cc/250 mg Rocephine via I.V. infusion over a 12 hour period:

= 100 cc/12 x 60 minutes
= 0.138 cc/min

I.V. set delivers 20 drops/cc:

= 20 drops/cc
= 2.77 drops/0.138 cc
= 2.77 drops/min

246. (d) 22.91 drops/min

We need to infuse 20 cc + 50 cc + 30 cc + 1000 cc = 1100 cc within 8 hours, therefore,

= 1100 cc/8 x 60
= 2.291 cc/min

I.V. set delivers 10 drops/cc,

= 10 drops/cc
= 22.91 drops/2.291 cc
= 22.91 drops/min

247. (d) 8.33 hours

We want to infuse 500 cc D5w solution with a flow rate of 20 drops/min. The I.V. set delivers 20 drops/cc, therefore one can say:

= 20 drops/min
= 20 drops/cc or 1 cc / min

Time required to complete the infusion:

= 500 cc/1 = 500 minutes = 8.33 hours

248. (b) 18.75 drops/min

Flow rate of solution drops/min:

= 300 cc /4 x 60 minutes
= 1.25 cc/min

I.V. set delivers 15 drops/cc therefore:

= 1.25 cc/min
= 18.75 drops/min

249. (b) 3 bags

Patient wt in kg = 155/2.2 = 70.45 kg
A normal therapeutic dose in mg is 10 mg/kg/day:

= 10 x 70.45 mg
= 704.5 mg

The number of I.V. infusion bags:

= 704.5/250 = 2.82 ≅ 3 bags

250. (a) 1 in 100 is interpreted as 1 gm of dextrose solution in 100 cc:

Amount of dextrose:

= 50/100
= 0.5 gm

251. (c) Milligrams of sodium bicarbonate:

= 480 x 5 / 100 (1 pint = 480 ml)
= 24gms
= 24000mgs

The number of mEqs of sodium ions:

= 24000mgs / 84 (1mEqs NaHCO3 = 84mg)(equivalent weight = mw / no of valence)

= 285.71mEqs of sodium bicarbonates
= 285.71mEqs of Na
= 285.71mEqs of HCO_3^-

252. (d) When only serum creatinine is available, the following formula (based on sex, weight and age of the patient) may be used to convert this value into creatinine clearance.

$$CrCl = \frac{\text{weight (kg) x (140-age)}}{\text{72 x serum creatinine (mg/dL)}}$$

CrCl (female) =0.85 x male (CrCl)

= 185/2.2 x (140 - 52) / 72 x 3.7
= 27.78 ml/minute

253. (c) The recommended weekly dose of a drug for a patient weighing 110 lbs. should be:

= 110 x 4 x 0.01 / 2.2
= 2 mcg

The number of (2 mcg/ml) ampules required:

= 2/2
= 1 ampule

254. (a) The total dose a patient should be getting per minute:

= 0.25mcg x 110 / 2.2
= 12.5mcg/min

Time required to finish up a 2.5mg (2500mcg) dose:

= 2500 / 12.5
= 200 minutes
= 200 / 60 = 3.33 hours = 4 hours

255. (d) The concentration of KCl in mEq/ml in 12 oz of water:

= 40mEq / 360cc
= 0.11mEq / cc

5cc of this resultant (0.11mEq/ml) solution is diluted up to the 25cc mark, therefore:

= 5 cc x 0.11mEq
= 0.55mEq / 5cc

= 0.55mEq / 25cc
= 0.02mEq / cc
= 0.02 x 74.5mg (1 mEq = 74.5mg)
= 1.64 mg / cc

256. (b) Kaletra oral solution contains 80mg Lopinavir and 20mg Ritonavir per ml, therefore:

= 400 / 20 = 20cc

A 7-day supply would be:

= 20 x 7 = 140cc

257. (b) The number of 240cc (8 oz) bottles required to provide 100 calories (0.1Kcal):

= 100 / 240 (since 1cc = 1 calorie)
= 0.42
= 1 bottle

258. (b) Total milligrams of Atenolol present in a 0.015% eye drop:

= 0.015 / 100
= 0.00015gm
= 0.15mg

259. (d) The number of milligrams present in each ml of solution:

= 0.0002 / 100
= 0.000002gm
= 0.000002 x 1000mg
= 0.002mg

260. (a) Total dose per day required:
= 32 x 2
= 64mcg (32mcg for each nostril)

The total number of micrograms present in a nasal spray bottle:

= 40 x 16
= 640mcg

The number of days the bottle will last:

= 640 / 64
= 10 days

261. (d) Creatinine clearance can be calculated by using the following formula:

$$\text{CrCl} = \frac{\text{weight (kg) x (140-age)}}{\text{72 x serum creatinine (mg/dL)}}$$

= 85 x (140-31) / 2.2 x 72 x 3.9
= 15ml/minute

CrCl (female) =0.85 x male (CrCl)

= 0.85 x 15
= 12.75ml/minute

Therefore, the recommended dose should be 500mg every 12 hours. The daily dose should be 1000mg.

262. (d) The standard rate of Primacor is 0.25mg/kg/hr, therefore:

= 0.25 x 110 / 2.2
= 12.5mg Primacor will be required per hour, so:
= 12.5mg/0.2 (1ml = 0.2mg Primacor)
=62.5ml

Therefore, 62.5ml Primacor solution should be administered to a patient within 1 hour in order to a provide 12.5mg dose.

Therefore:

= 62.5ml/1 hr
= 62.5ml/60 minutes
= 1.04ml/minute

263. (c) First, to calculate the dose of Lanoxin in elixir dosage form:

= 5 x 25mcg
= 125mcg
= 0.125mg (1mg = 1000mcg)

Since elixir provides 80% bioavailability (means 20% less bioavailability than I.V. dosage form), one can say:

= 0.125 x 20 / 100
= 0.025mg

This means an I.V. dosage of Lanoxin requires 0.025mg less compared to elixir dosage form, therefore:

= 0.125 - 0.025
= 0.100mg dose is required when using an I.V. dosage formulation.

264. (d) Each gram of fat provides 9 calories, therefore:

= 11gm x 9 x 1000 / 240 (8 oz = 240cc)
= 412.5 calories
= 413 calories

265. (c) The number of Ensure Plus bottle required per day:

= 2100 / 350
= 6 bottles

Each bottle contains 13gm protein, therefore:

= 13gm x 6
= 78gm protein
= 78 x 4 (1gm protein = 4 calories)
= 312 calories

266. (a) The number of mEqs of potassium present in 8 oz (240cc) of Ensure Plus:

= weight in mg / equivalent weight
= 500mg / 39 (1 equivalent weight = 39mg)
= 12.82mEqs potassium

Total number of mEqs present in 720cc:

= 12.82 x 3
= 38.4 mEqs = 39 mEqs

267. (a) The daily protein requirement for a person weighing 110 lbs:

= 110 x 0.45 / 2.2
= 22.50gm

Each Ensure Plus bottle provides 13gm of protein, therefore:

= 22.5 / 13
= 1.73
= 2

268. (a) The number of mEqs of potassium in 4 oz (120cc) Ensure Plus:

= weight in mg / equivalent weight
= 250 / 39 (1 equivalent = 39mg K)
= 6.41mEqs

The number of mEqs of potassium in 10gm KCl powder:

= weight in mg / equivalent weight
= 10000 / 74 (1 equivalent = 74mg KCl)
= 135.14mEqs KCl = 135.14 mEqs K^+ = 135.14 mEqs Cl^- (since KCl = K^+ + Cl^-)

Total mEqs:

= 6.41 + 135.14
= 141.55mEqs
= 142mEqs

269. (c) The concentration of Pentam in a Dextrose 5% solution:

= 1000mg / 505ml (5ml SWFI + 500ml D5W solution)
= 1.98mg / ml

270. (b) The number of milligrams of Morphine required daily is:

= 15 x 6
= 90mg

Therefore, the Duragesic dose should be 25mcg/hr. This patch should be replaced every 3 days. To fill the 30-day supply, we need 10 patches (25mcg/hr).

271. (c) 53ml/min

$$CrCl = \frac{\text{weight (kg) x (140-age)}}{\text{72 x serum creatinine (mg/dL)}}$$

= 180 x (140-52) / 2.2 x 72 x 1.9
= 52.63ml/min
= 53ml/min

272. (d) A patient's weight in lbs.:

= 57 x 2.2
= 125.4 lbs.
= 125lbs.

The recommended dose of Vermox suspension in ml:

= 1250 x 5 / 250 (from chart 125 lb = 1.25gm)
= 25mls

273. (c) The total dose of Trimethoprim in milligrams:

= 20 x 155 x 21 / 2.2
= 29,590mg

Each Septra DS contains 160mg trimethoprim and 800mg sulfamethoxazole. Therefore, the number of tablets required is:

= 29590 / 160
= 184.93
= 185

274. (b) The creatinine clearance for infants and children can be calculated by using the following formula:

Schwartz equation:

CrCl (ml/min)= [length (cm) x k] / Serum creatinine

Patient population:

1. Infants 1 to 52 weeks old k = 0.45
2. Children 1 to 13 years old k = 0.55
3. Adolescent females 13-18 years old k = 0.55
4. Adolescent males 13-18 years old k = 0.70

Therefore, for the above patient, the CrCl is:

= k x length (cm) / serum creatinine
= 0.55 x 24 x 2.54 / 2.1 (1 inch = 2.54 cm)
= 15.96ml/min
= 16ml/min

275. (a) The chart describes the multiplication factor for converting the daily dose of prior opioids to the daily dose of oral oxycodone:

Daily dose of oxycodone (mg)

= multiplication factor x prior opioid (mg/day)
= 0.5 x 60mg
= 30mg

Therefore, 60mg of oral morphine is equivalent to 30mg of oral oxycodone.

The number of 5mg oxycodone tablets required to fill a 7-day supply:

= 30 x 7 / 5
= 42 tablets

276. (c) The chart describes the multiplication factor for converting the daily dose of prior opioids to the daily dose of oral hydromorphone:

PRACTICE TEST

1. How many milligrams are present in a 1/150 gr Nitrostat tablet?

a. 1.2 mg
b. 0.43 mg
c. 45 mg
d. 3.5 mg

2. How many 1/200 gr of tablets can be prepared from 500 mg of active ingredient?

a. 167
b. 432
c. 1538
d. 1100

3. How many milligrams of Guiafenesin will be present in 480cc (15 mg/5 cc) of solution?

a. 908 mg
b. 1440 mg
c. 1000 mg
d. 521 mg

4. If the retail cost of each Zyprexa tablet is $2.40, what would be the retail cost for 30 tablets?

a. 72
b. 111
c. 24
d. 67

5. How many grams of dextrose are required to prepare a 1000 cc D_5w solution?

a. 125 gm
b. 75 gm
c. 50 gm
d. 500 gm

6. How much atropine is required to prepare a 1:500, 500 cc solution of atropine ?

a. 0.5 gm
b. 0.005 gm
c. 10 gm
d. 1 gm

7. How many grams of Lidocaine are required to dispense 1 quart of 1 in 50 solution?

a. 11.4 gm
b. 5 gm
c. 19.2 gm
d. 21 gm

8. How many calories are provided by 1 quart of a 1 in 500 solution of dextrose?

a. 11.2 calories
b. 9.55 calories
c. 55.6 calories
d. 6.53 calories

9. How much Xylocaine is required to prepare 30 cc of a 1:500 solution of Xylocaine?

a. 120 mg
b. 90 mg
c. 60 mg
d. 30 mg

10. In what proportion should 49% alcohol be mixed with water to prepare 1000 cc of a 25% alcohol solution?

a. 30.5 cc
b. 810 cc
c. 111 cc
d. 510.2 cc

11. How much Heparin is required to dispense a 0.25% 750 cc solution?

a. 1.875 gm
b. 5.25 gm
c. 0.115 gm
d. 2.10 gm

12. If a prescription calls for "Biaxin 500 mg po bid x 10 days", how many cc of Biaxin 125 mg/5 cc are required to dispense a 10 day supply?

a. 200 cc
b. 100 cc
c. 400 cc
d. 50 cc

13. If a prescription is written to take 50 mg of diphenhydramine by mouth four times a day for 5 days, how many cc of 12.5 mg/5 cc diphenhydramine solution are required to dispense 5 day supply?

a. 400 cc
b. 20 cc
c. 80 cc
d. 10 cc

14. If 125 mcg of a drug are diluted with water up to 50 cc, what is the % of drug ?

a. 0.25%
b. 1.25%
c. 0.00025%
d. 0.0025%

15. If 1 tablespoonful of Thioridazine intense solution (100 mg/cc) is diluted with water up to 1 quart, what is the % of drug in the final solution?

a. 1.25%
b. 0.005%
c. 0.156%
d. 2.75%

16. If 10 teaspoonfuls of Risperdal oral solution (100 mcg/5 cc) are diluted with water up to 480 cc, what is the concentration of drug in mcg/cc in the final solution?

a. 1.2 mcg/ml
b. 2.5 mg/ml
c. 2.083 mcg/ml
d. 5.10 mcg/ml

17. How many cc of 10% Benzoyl peroxide are required to prepare a 5% 20 cc Benzoyl peroxide solution?

a. 10 cc
b. 50 cc
c. 25 cc
d. 100 cc

18. How many milligrams of Clindamycin are present in 60 cc of 0.1% topical gel of clindamycin?

a. 100 mg
b. 30 mg
c. 60 mg
d. 45 mg

19. How many tablets of 250 mg erythromycin are required to prepare 500 cc of 2% topical solution of erythromycin?

a. 10
b. 40
c. 80
d. 20

20. If 325 mg of ferrous sulfate contains 22% elementary iron, how many milligrams of elementral iron will the patient receive with each dose?

a. 20 mg
b. 60 mg
c. 71.5 mg
d. 50 mg

21. If niferex liquid solution provides 10 mg of elementral iron in 1 teaspoonful, how many cc of solution are required to provide 55 mg of elementral iron ?

345. C
346. D
347. D
348. C
349. D
350. A
351. C
352. A
353. A
354. A
355. B
356. C
357. A
358. A
359. B
360 C
361. A
362. D
363. D
364. B
365. A