

REFERENCE GUIDE FOR FOREIGN PHARMACY LICENSING EXAM

(Questions and Answers-Part I)

2008-2009

Manan H. Shroff

**REFERENCE GUIDE FOR
FOREIGN PHARMACY
LICENSING EXAM
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DEDICATED

TO

KRISHNA

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REFERENCE GUIDE
FOR FOREIGN
PHARMACY
LICENSING EXAM
Questions and Answers

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PREFACE

Reference Guide For Foreign Pharmacy Licensing Exam Questions and Answers (Part-I) is specifically written for students preparing for the FPGEE® exam. It has approximately **1000 FPGEE® TYPE questions** with answers and complete explanations. The FPGEE® exam puts more emphasis on pharmacy management, statistics, immunology, pharmacology, kinetics and biopharmaceutics, therefore an effort was made to include all of these topics in a review guide. To prepare for pharmacology, I would highly recommend that you take advantage of the **Reference Guide For Pharmacy Licensing Exam-Theory**.

Our preparation guide covers all the important topics you need to be familiar with to pass the FPGEE®. I would recommend that you to go through the FPGEE® review guide sample questions provided by the NABP (you will get one when your approval from the FPGEE® arrives) to evaluate the importance of our review materials.

Each answer is explained thoroughly to refresh your memory on specific topics. Please do not go through only the questions and answers. Try to understand and learn the answer's explanations. It is the best way to get the most out of this review guide.

I hope my efforts will help you to pass your key exam. I wish you the very best of luck, and any questions or comments are always welcome.

Good Luck,

MANAN H SHROFF

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- 1.** *Benzyl alcohol* is classified as:
- Emulsifying agent
 - Preservative
 - Diluent
 - Suspending agent
- 2.** *Cold cream* is an example of:
- Suspension
 - O/W emulsion
 - W/O emulsion
 - O/W/O emulsion
- 3.** *Egg yolk or egg white* is used as:
- Emulsifying agent
 - Suspending agent
 - Binder
 - Preservative
- 4.** The transfer of a drug from high concentrated areas to low concentrated areas is generally defined as:
- Infusion
 - Levigation
 - Diffusion
 - Dissolution
- 5.** Which of the following is the *most suitable route* for administration of insulin ?
- IM
 - SC
 - IV
 - IV bolus
- 6.** *Noyes Whitney equation* is helpful to predict the rate of:
- Drug diffusion
 - Drug dissolution
 - Drug degradation
 - Drug oxidation
- 7.** *Polymorphism* is generally defined as:
- Substance that may exist in more than one crystalline form.
 - Substance that may exist only in meta-stable form.
 - Substance that has different viscosity time to time.
 - Substance that reduces interfacial tension.
- 8.** The minimum concentration of a drug at the receptor site to initiate pharmacological action is defined as:
- T_{max}
 - MEC
 - MTC
 - C_{max}
- 9.** The area under curve gives useful information about :
- The amount of drug systematically absorbed.
 - The time to reach peak concentration.
 - The time to reach minimum toxic concentration.
 - The concentration at which pharmacological actions of drug would be initiated.
- 10.** Which of the following is the major plasma protein involved in drug binding?

- a. Globulin
- b. Creatinine
- c. Albumin
- d. Glycoprotein

11. Which of the following equations may be useful to find out the plasma concentration of a drug ?

- a. $V_d \times P = C_p$
- b. $P \times C_p = V_d$
- c. $V_d = P/C_p$
- d. $V_d = C_p/P$

12. The initial dose of a drug through IV bolus to achieve desirable plasma concentration at once is known as:

- a. Loading dose
- b. Maintenance dose
- c. Replacement dose
- d. Degradation dose

13. Which of the following is/are useful to measure *glomerular filtration rate*?

- I. Creatinine
- II. Inulin
- III. Albumin

- a. I only
- b. I and II only
- c. II and III only
- d. All

14. The rapid degradation of a drug by liver enzymes in a liver is defined as:

- a. Third pass effect of metabolism
- b. First pass effect of metabolism
- c. Rapid degradation
- d. Liver elimination

15. The normal renal creatinine clearance value lies between:

- a. 200 to 300 ml/min
- b. 80 to 120 ml/min
- c. 30 to 60 ml/min
- d. 10 to 20 ml/min

16. Which of the following is an example of an *oligosaccharide*?

- a. Glucose
- b. Sucrose
- c. Starch
- d. Glycogen

17. Which *pyrimidine base* is found only in RNA?

- a. Cytosine
- b. Thymine
- c. Uracil
- d. Adenine

18. Heparin is classified as a(n):

- a. Heteropolysaccharide
- b. Oligosaccharide
- c. Homopolysaccharide
- d. Monosaccharide

19. *Ribonucleic acid* exists in all of the following forms EXCEPT :

- a. r RNA
- b. m RNA
- c. q RNA
- d. t RNA

20. Which of the following structures is a host for *Kreb's cycle* ?

- a. Mitochondria
- b. Golgi bodies

- c. Cytoplasmic membrane
- d. Ribosome

21. The synthesis of glucose from *sources other than carbohydrates* is generally known as:

- a. Glycolysis
- b. Gluconeogenesis
- c. Glycogenolysis
- d. Glucogenesis

22. Which of the following amino acids should be considered an *essential amino acid(s)* for the body ?

- I. Phenylalanine
- II. Leucine
- III. Tryptophan

- a. I only
- b. I and II only
- c. II and III only
- d. All

23. Which of the following enzymes catalyses the *coupling of two molecules* of nucleotides to form DNA ?

- a. Transferase
- b. Ligase
- c. Isomerase
- d. Aldehyde dehydrogenase

24. A *nucleotide* is a building block of:

- a. Sphingomide
- b. Nucleic acid
- c. Amino acid
- d. Starch

25. Which of the following cells are involved with immune responses of the body?

- I. B lymphocytes
- II. T lymphocytes
- III. Neutrophils

- a. I only
- b. I and II only
- c. II and III only
- d. All

26. Which of the following immunoglobulin levels are elevated during asthma ?

- a. IgM
- b. IgD
- c. IgE
- d. IgA

27. All of the following tests are required to check sensitivity of class A weighing prescription balance ***EXCEPT*** :

- a. Arm ratio test
- b. Rider graduated beam test
- c. Shift test
- d. U test

28. The ratio of the mass of an object measured in a vacuum at specific temperature to volume (in ml) of an object at the same temperature is defined as:

- a. Absolute density
- b. Specific gravity
- c. Relative density
- d. Apparent density

29. The mean blood pressure of Mr. Ham is:

- 01/01/00** 80 mm hg **04/04/00** 90 mm hg
- 01/02/00** 82 mm hg **01/05/00** 85 mm hg
- 01/03/00** 81.5 mm hg **01/06/00** 83 mm hg

- a. 81.5
- b. 85.6
- c. 83.58
- d. 84.20

30. The deviation of data from its mean is generally described by:

- a. The average
- b. The standard deviation
- c. The precision
- d. The accuracy

31. The *reproducibility of results* of a number of experiments is generally known as:

- a. Precision
- b. Bias
- c. Accuracy
- d. Closelessness

32. If the value of $p = 0.6$ in binomial distribution, what is the probability of failure ?

- a. 0.2
- b. 0.4
- c. 0.3
- d. 1.0

33. The α error is generally considered significant at:

- a. 1%
- b. 3%
- c. 5%
- d. 10%

34. When the hypothetical value of a parameter is the same as the observed value of a parameter, the error should be considered:

- a. Alfa-error
- b. Beta-error
- c. Gema-error
- d. Infinitive

35. Find out the *degrees of freedom in a Chi-square* test in a 2x2 contingency table (assume tests are independent).

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

36. The F distribution generally compares:

- a. Two means
- b. Two variances
- c. Three means
- d. Three variances

37. Which of the following elements has the highest *electronegativity*?

- a. Cl
- b. F
- c. Br
- d. I

38. Which of the following molecules has the largest *dipole movement*?

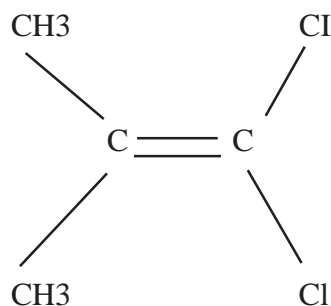


FIGURE - I

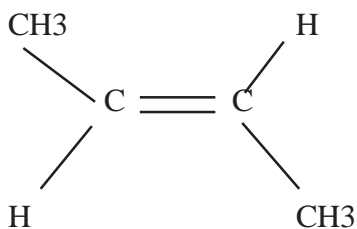


FIGURE-2

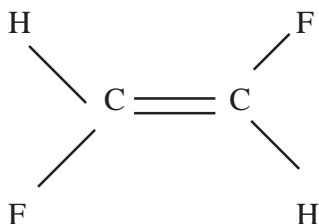


FIGURE-3

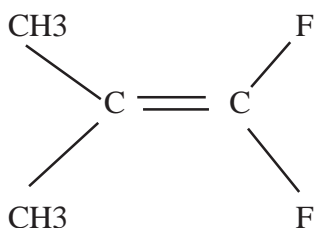


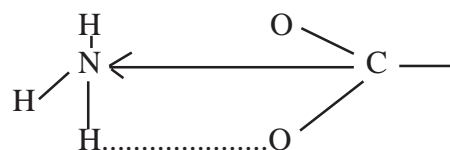
FIGURE-4

- a. Fig I
- b. Fig II
- c. Fig III
- d. Fig IV

39. Which of the following molecules has the highest boiling point?

- a. H₂O
- b. H₂S
- c. H₂Se
- d. HCN

40. The bond between NH₃ and CO₂ is best described as a:



- a. Hydrophobic interaction force
- b. Ion dipole or ion induced dipole force
- c. London force
- d. Van der walls force

41. The process of transforming a solid directly to a vapor state is generally defined as:

- a. Evaporation
- b. Melting
- c. Sublimation
- d. Levigation

42. The characteristic of solid substances to exhibit more than one crystalline or amorphous form is defined as:

- a. Isomerism
- b. Polymorphism
- c. Zwitter ion
- d. Coupling

43. Which of the following molecules represents CIS form ?

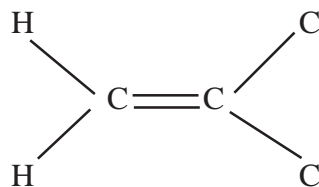


FIGURE - I

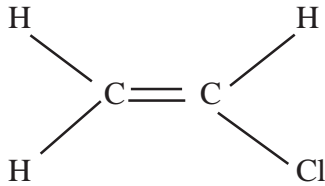


FIGURE - 2

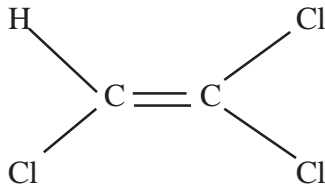


FIGURE - 3

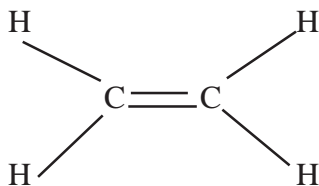


FIGURE - 4

- a. Fig I
- b. Fig II
- c. Fig III
- d. Fig IV

44. Which of the following drugs is an angiotensin receptor antagonist ?

- a. Lisinopril
- b. Losartan
- c. Methyldopa
- d. Captopril

45. According to Fick's law of diffusion, which of the following is inversely proportionate to the rate of diffusion ?

- a. The area of the solid.
- b. The difference between the concentration of solute to concentration of solute in stagnant layer.

- c. Diffusion coefficient.
- d. The length of the stagnant layer.

46. Acetone is classified as a:

- a. Polar solvent
- b. Nonpolar solvent
- c. Semipolar solvent
- d. Dipolar solvent

47. The process of degradation of ionic compounds into *cations and anions* in a presence of water is defined as:

- a. Solvation
- b. Hydration
- c. Activation
- d. Degradation

48. What happens to the solubility of alcohol as the *molecular weight of alcohol increases* ?

- a. Reduces
- b. Increases
- c. Remain unchanged
- d. Insoluble in water

49. The *degradation of Riboflavin* by light is classified as:

- a. Oxidation
- b. Reduction
- c. Photochemical degradation
- d. Racemization

50. The *degradation of Penicillin G Procaine* is highest in:

- a. Solution
- b. Suspension
- c. Elixir
- d. Tablet

51 The rate of oxidation is influenced by all of the following **EXCEPT** :

- a. Temperature
- b. Radiation
- c. Presence of catalyst
- d. Hydrolysis

52. Which of the following are characteristics of *pseudoplastic flow*?

- I Viscosity of the flow generally decreases with an increase in the rate of shears.
 - II No yield value has been found with flow.
 - III. Suspension of tragacanth follows the pseudoplastic's flow.
- a. I only
 - b. I and II only
 - c. II and III only
 - d. I, II and III only

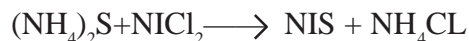
53. Which of the following is **NOT** true about *microemulsion*?

- a. The mean diameter of a droplet generally lies between 10 to 200 nm.
- b. It is a thermodynamically stable system.
- c. It requires a cosurfactant.
- d. It is intermediate in property between solution and emulsion.

54. A system with considerable interaction between *dispersed phase and dispersion medium* is known as:

- a. Lyophilic
- b. Lipophilic
- c. Lyophobic
- d. Radioactive colloids

55. To balance the following equation, how many molecules of NH_4Cl would be required?



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

56. The *random motion of solute particles* in colloidal dispersion is known as:

- a. Newtonian flow
- b. Brownian motion
- c. Stoke's law
- d. Non-Newtonian flow

57. Which of the following about flocculated suspension is **NOT** true?

- a. Particles of suspension form loose aggregates.
- b. Rate of sedimentation is very low.
- c. The time to form sediment is less.
- d. The sedimentation is easy to redisperse.

58. The rate of sedimentation is independent of :

- a. The viscosity of dispersion medium.
- b. The diameter of suspended particles.
- c. The difference in densities between dispersed medium and dispersed phase.
- d. The lipophilic nature of particles.

59. Which of the following compounds is *an acetanilide*?

- a. $CH_3CONHC_6H_5$
- b. CH_3CHO
- c. $C_6H_5CH=N.C_6H_5$
- d. $C_6H_5N=NC_6H_5$

387. Which of the following ratios is the best indicator of a pharmacy's profitability ?

- a. Net profit to net sales
- b. Net profit to net worth
- c. Net profit to total asset
- d. Net profit to inventory

388. Which of the following ratios generally indicates the efficiency of a pharmacy ?

- a. Net profit to total assets.
- b. Inventory turnover rate
- c. Capitalization of net profit
- d. Net profit to net sales

389. All of the following indicate the ratio that measures the efficiency of a pharmacy **EXCEPT:**

- a. Inventory turnover rate
- b. Net sales to inventory
- c. Acid test
- d. Net sales to net working capital

390. The acceptable ratio for net profit to net sales would be:

- a. Less than 1%
- b. 1 to 2 %
- c. 2 to 3 %
- d. 5 to 7%

391. What would be the acceptable ratio for 10 year old pharmacy's net profit to net worth?

- a. 1%
- b. 5%
- c. 15%
- d. 50%

392. Which of the following is true about net profit to inventory ratio?

- I. It indicates profitability as well as the efficiency of pharmacy.
 - II. It can be used for new and old pharmacies.
 - III. It increases with an increase in sales of the pharmacy.
- a. I only
 - b. I and II only
 - c. II and III only
 - d. I, II, and III only

393. Manan Pharmacy's net profit to total assets ratio is found to be 15%. This will indicate the pharmacy's profitability is :

- a. Good
- b. Excellent
- c. Outperform
- d. Worst

394. Manan's Pharmacy's part of the financial balance sheet is as follows:

YEAR 2000 SALES

RX	\$600,000
Merchandise	\$150,000
Total	\$750,000
Cost of goods sold	\$500,000
Beginning inventory	\$200,000
Ending inventory	\$220,000

What would be the inventory turnover rate for Manan's Pharmacy?

- a. 4.3
- b. 2.38
- c. 3.5
- d. 6.0

395. The inventory turnover rate of the above pharmacy would :

- a. Meet the expectation
- b. Below the expectation
- c. Exceed the expectation
- d. Cannot calculate

396. The net sales of the above pharmacy are 840,000. Find out the ratio of net sales to inventory of the above pharmacy. [assume inventory of above pharmacy at time of calculation is \$210,000]

- a. 8
- b. 4
- c. 10
- d. 12

397. Find out the net worth of Manan's Pharmacy?

Total current assets = \$150,000
Total fixed assets = \$40,000
Total liabilities = \$75,000

- a. 2.55
- b. 115,000
- c. 35,000
- d. 1.3

398. Which of the following ratios best describes the account receivable collection times?

- a. $\frac{\text{year end account receivable}}{\text{mean credit sales per day}}$
- b. $\frac{\text{annual credit sales}}{\text{total account receivable}}$
- c. $\frac{\text{total account receivable}}{365}$
- d. $\frac{\text{annual credit sales}}{24}$

399. Which of the following classes of recalls should be considered a potential hazard to health ?

- a. Class I
- b. Class II
- c. Class III
- d. Class IV

400. Which of the following categories indicates the use of a drug is restricted during pregnancy ?

- a. A
- b. B
- c. X
- d. C

401. *Liquidity* generally expresses a pharmacy's ability to meet its:

- a. Assets
- b. Current liability
- c. Inventory
- d. Prepaid expenses

402. The acid test generally measures a pharmacy's:

- a. Financial position
- b. Liquidity
- c. Profitability
- d. Inventory

403. Which of the following is generally **NOT** included in current assets ?

- a. Cash
- b. Accounts payable
- c. Accounts receivable
- d. Inventory

404. Which of the following would generally be considered the *fixed assets* of a pharmacy?

- a. Inventory
- b. Fixtures and equipment
- c. Cash
- d. Accounts receivable

405. All of the following can be considered the current liability of a pharmacy **EXCEPT**

- a. Accounts payable.
- b. Notes payable within 1 year.
- c. Accrued expenses.
- d. Notes payable beyond 1 year.

406. Find out the *Acid test* (quick ratio) of Manancare Pharmacy from Table 1?

- a. 202/1
- b. 1.47/1
- c. 13/1
- d. 1/1

TABLE 1

A **CURRENT ASSETS**

Cash	\$ 50,000
A/C receivable	\$ 75,000
Inventory	\$ 100,000
Prepaid expenses	\$ 10,000
Total current assets	\$ 235,000

B **FIXED ASSETS**

Fixtures and equipment	\$ 30,000
Deposits	\$ 5,000
Total fixed assets	\$ 35,000

TOTAL ASSETS **\$ 270,000**

C **CURRENT LIABILITIES**

A/C payable	\$ 70,000
Notes payable (1 yr)	\$ 5,000
Accrued expenses	\$ 10,000
Total current liabilities	\$ 85,000

D **LONG TERM LIABILITY**

Notes payable (>1 yr)	\$ 20,000
Total liabilities	\$ 105,000
Net worth	\$ 165,000
Cost of goods sold	\$ 490,000

407. Which of the following does **NOT** measure the pharmacy's liquidity ?

- a. Acid test ratio
- b. Current ratio
- c. Net sales to inventory
- d. Inventory to its net working capital

408. Total liabilities to net worth ratio of *Manancare Pharmacy* is :

- a. Acceptable
- b. Below expectation
- c. Exceeds the expectation
- d. Cannot be calculated

409. The investment in *fixed assets* of MananCare Pharmacy :

- a. Exceeds the requirement
- b. Is below the requirement
- c. Meet's the requirement
- d. Cannot be calculated

410. Manancare Pharmacy wants to sell its prescription files. The Manancare Pharmacy owners asks **\$350,000** for the existing prescription file.

The Manancare Pharmacy provides the following data upon request.

Total new RX dispensed in past 2 years. \$ 80,000

The % of Rx that has one or more refill left 40%

The average RX price \$ 50

Net profit % % 15

What would be your answer to the owner of the pharmacy?

- a. Price is okay.
- b. Price is too high.
- c. Price is breaking even.
- d. Cannot be calculated.

411. “Manancare Pharmacy” markdowns the price of analgesic balm from **\$3 to \$2**. If the mark down of the price increases the sales of analgesic balm from **60 tubes to 80 tubes**, what would be the coefficient of elasticity of this product ?

- a. 1
- b. 2
- c. 0.25
- d. 0.5

412. When relative change in revenue is same as the relative change in price, it is known as:

- I. Unitary elasticity
 - II. Inelastic demand
 - III. Elastic demand
- a. I only
 - b. I and II only
 - c. II and III only
 - d. I, II and III only

413. Find out the retail price of a box of insulin syringes if the cost complement of the product is 55% and the cost of one box of insulin is \$9.00.

- a. \$4.95
- b. \$16.30
- c. \$15.11
- d. \$13.95

414. Find out the % markup of Vasotec prescription if 30 tablets of Vasotec 5 mg retail price is \$75 and the cost of the drug is \$45.

- a. 55%
- b. 75%
- c. 66%
- d. 10%

415. Find out the *retail price of one box* of insulin syringes if :

The cost of complement = 55%
The known retail markup = 45%
The cost of syringes = \$9.00

- a. 4.95
- b. 13.95
- c. 16.30
- d. 15.11

416. For Manancare Pharmacy, the total rent for the whole store including the Pharmacy department is **\$10,000**. The size of the pharmacy is **600 ft²** and the size of the whole store is **5000 ft²**. On the basis of above figures, what would be the rent of the pharmacy alone?

- a. \$ 1000
- b. \$ 2000
- c. \$ 1200
- d. \$ 800

417. The funding for Medicare programs is generally obtained from:

- I. Social security taxes
 - II. Premiums paid by participant
 - III. State government
- a. I only
 - b. I and II only
 - c. II and III only
 - d. I, II and III only

418. In a patient cost sharing plan, when a patient has to pay a specified amount of the cost of prescriptions and a third party will pay the remaining cost of prescriptions, it is known as:

- a. Copayment
- b. Coinsurance
- c. Deductible
- d. Retrospective payment

419. A person who works for an insurance company, provides the statistical data that indicates the risk associated with serving the population, and determines the premiums to cover all the estimated expenses is known as:

- a. Pharmacy manager
- b. Actuary
- c. Sponsor
- d. Vendor

420. The maximum amount that will be paid by a third party to a pharmacy when the drug is available from more than one source is defined as:

- a. Maximum allowable cost (MAC)
- b. Estimated acquisition cost (EAC)
- c. Actual acquisition cost (AAC)
- d. Average wholesale price (AWC)

421. When a patient pays a full predetermined amount to the provider at the beginning of each month it is known as:

- a. Concurrent reimbursement
- b. Prospective reimbursement
- c. Retrospective reimbursement
- d. Cash reimbursement

422. The increase in the number of taking the foreign pharmacy exam is as follows:

Year	Students taking the exam.
1981	350
1982	420
1983	530
1984	600
1985	620
1986	635
1987	700
1988	850

Find out the mean of the above data:

- a. 601
- b. 588
- c. 720
- d. 520

423. What would be the median of the above example?

- a. 350
- b. 850
- c. 610
- d. 635

424. A random sample of the blood glucose concentration of 100 patients has a mean of 130 and a median of 155. The frequency distribution of the sample is:

- a. Normally distributed
- b. Positively skewed
- c. Negatively skewed
- d. Cannot be calculated

425. All of the following can be a shape of frequency of distribution **EXCEPT:**

- a. Bell shaped distribution
- b. Skewed shape distribution
- c. U shape distribution
- d. T shape distribution

426. What would be the Pearsonian coefficient of skewness if a sample has a mean of 55 and a median of 45. The standard deviation of the sample is 35.

- a. 0.90
- b. 1.0
- c. 0.85
- d. 0.35

427. Which of the following about a Binomial experiment is **NOT** true?

- a. Each trial results in an outcome that is classified as success or failure.
- b. The repeated trials are dependent upon previous experiment.
- c. The experiment generally consists of n-repeated trials.
- d. The probability of success remains constant from trial to trial.

428. What is the mean binomial distribution if the probability of success is 0.60 in 50 trials ?

- a. 5
- b. 3
- c. 8
- d. 4

429. If the blood pressure measurement of 5 people is 110, 135, 140, 125 and 115 respectively . What would be the range of the set of the above observations?

- a. 110
- b. 30
- c. 125
- d. 140

430. When plotting t distribution curves, if sample size of 20 is taken from a normal population, what would be the degree of freedom in the t distribution?

- a. 40
- b. 19
- c. 10
- d. 2

431. Find out the degree of freedom in a 2 x 3 contingency table Chi-square test when it is applied to test the hypothesis of independence of two variables?

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

432. The average length of time it takes students to finish an exam is 180 minutes, with a standard deviation of 36 minutes. A new examination procedure using modern computers is being tested. A random sample of 50 students had an average examination time of 150 minutes, with a standard deviation of 40 minutes under the new system. Test the hypothesis that the population mean is now less than 180 minutes. This hypothesis would result in ?

- a. One sided
- b. Two sided
- c. Three sided
- d. Cannot be calculated

433. In protein, Amino acids are joined covalently by :

- a. Hydrogen bond
- b. Peptide bond
- c. Oxygen bond
- d. Disulfide bond

434. The secondary structure of protein consists of :

- I. Alfa-helix
- II. Beta-sheet
- III. Beta-bend

related. A dose of more than 800 mg is strictly prohibited by the FDA. NMS, tardive dyskinesia, and extrapyramidal symptoms are reported side effects of the drug.

Drugs that may cause ocular toxicity include:

- * Chloroquine
- * Hydroxychloroquine
- * Amiodarone
- * Chlorpromazine
- * Phenothiazine class of drugs
- * Corticosteroid, by increasing intraocular pressure of eyes

131 (d) All. Bleomycin, Amiodarone and Nitrofurantoin are associated with pulmonary toxicity.

132 (a) Extensive clinical trials on humans generally include phase III clinical trials.

Clinical studies of new drugs on humans are generally subdivided into four phases:

Phase I: This phase includes a cautious trial of the drug in humans.

Phase II: This phase includes more depth than a clinical trial in normal patients and initial trials in disease patients.

Phase III: This phase consists of broad clinical trials in disease patients to ensure that the drug is of clinical benefit for what it claims for.

Phase IV: Postmarketing clinical trials are conducted only after the drug is passed by the FDA.

133 (c) When two structurally different chemicals produce the same clinical effect, it is known as therapeutic equivalence.

When two or more dosage forms of a drug contain the same amount of drug in each dosage form, it is known as chemical equivalence.

When the same drug in two or more dosage forms produces the same in vivo effect that can be measured by pharmacological responses or by control of a symptom or disease, it is known as clinical equivalence.

When a drug in two or more similar dosage forms produces an identical rate of drug absorption and superimposable area under the curve, the drug is said to be bioequivalent.

134 (b) Concentration of a drug at a receptor site is not included in bioequivalency studies. Peak height concentration, the time required to reach peak concentration, and AUC are used to evaluate the bioequivalency of two or more formulations of the same drug.

135 (c) A substance that kills microorganisms but not the bacterial spore is defined as a germicide.

Anything that kills bacteria is defined as a bactericide. The absence of viable microorganisms is defined as sterility. The process of destroying microorganisms is defined as disinfection. A substance that prevents the growth of microorganisms, but does not necessarily destroy them, is known as an antiseptic.

136 (c) 1 quart of solution contains 960 cc of solution. Therefore the quantity of drug in 1 quart of 0.45% solution is:

$$\begin{aligned} &= 960 \times 0.45 / 100 \\ &= 4.32 \text{ grams} \end{aligned}$$

137 (a) The sterilization methods are divided in five different categories:

- I Moist heat sterilization
- II Dry heat sterilization
- III Gas sterilization
- IV Filtration
- V Radiation

Moist heat sterilization: It is the most widely used method for sterilization. The cause of death of organisms is attributed to coagulation of the cellular protein of the organism. The substance should be kept under pressure for at least 15 minutes at a temperature of 121° . Moist heat sterilization is not the suitable method sterilization of petroleum jelly, mineral oil, greases, waxes and talcum powder.

Dry heat sterilization : It is the suitable method to sterilize oily substances such as mineral oil, waxes and greases. Because it is less efficient compared to moist heat, the substance should be kept for prolonged time under high temperature. The death of the organism is a result of an oxidation process.

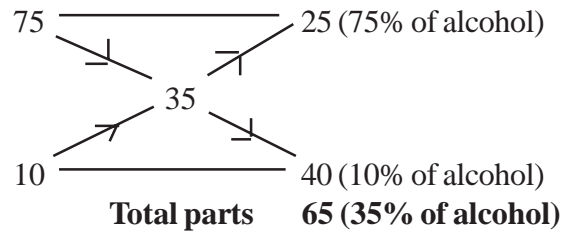
Gaseous sterilization: Ethylene oxide is the most widely used gas for sterilization. The advantage of ethylene oxide is that products can be sterilized and packaged for shipment since it can easily penetrate through plastic films and cartons. Formaldehyde and chlorine dioxide can also be used as a for gas sterilization.

Filtration: It is one of the oldest methods of sterilization. It removes the particulate matter from the solution. It is a widely used method for the sterilization of heat sensitive substances. The common pore size of the membrane filter is 0.22 micrometer.

Radiation: Sterilization by radiation is commonly employed in hospitals to sterilize hospital supplies, vitamins, antibiotics, steroids, hormones, medical devices and tissue transplants, It can be achieved by use of electromagnetic radiation or particle radiation. U. V. radiation with a wavelength of 253 nm also serves as a germicidal agent.

138 (b) Ethylene oxide and formaldehyde are commonly employed gases for sterilization.

139 (a) 192.30 cc. To solve this problem use the alligation method :



Total parts	Parts of 75% require
65	25
500	?

$$= 500 \times 25/65$$

$$= 192.30 \text{ cc}$$

140. (c)

$$LD = \frac{Vd \times (Cp \text{ desired} - Cp \text{ observed})}{F \times S}$$

$$= 10 \times 70 \times (1.5 - 1.0)$$

$$= 350 \text{ mcg}$$

* Therefore approximately three tablets of 0.125 mg is required to produce a loading dose.

141 (b) Sterilization by U. V. radiation generally requires a wavelength of 253 nm.

142 (c) 1 teaspoon of solution of (30 mg/cc) contains 150 mg of a drug. This solution is diluted with water the 480 cc mark, therefore we can say that :

480 cc solution contains	150 mg of drug
1 cc solution contains?	
=	150 / 480
=	0.31 mg/cc

143 (d) All tests can be used to identify the efficiency of laminar flow and the quality of steril-

ization. The laminar flow equipment is necessary to perform various sterility tests, aseptic filling and certain assembling operations. Laminar flow devices that deliver horizontal, vertical and curvilinear air flow are available.

For most sterility testing operations, the horizontal laminar flow is more preferable than vertical laminar flow since the former one is less likely to wash the organisms from operators hands or equipment into sterility test media.

The vertical laminar flow is most suitable for preparation of cytotoxic substances or drugs that may cause severe harm when inhaled, since the blow of air in this case is less likely to affect the operators (since it will move from top to bottom).

The velocity of air used in such devices is generally $90 \text{ fpm} \pm 20\%$. The filters that are generally used in laminar flow are known as HEPA (High Efficiency Particulate Air) filters.

Smoke tests (usually check the quality of air) and DOP (Dioctyl phthalate) tests usually employed to find out the efficiency of filters. Microbial tests check the effectiveness of HEPA filters.

144 (c) The rate of hydrolysis generally depends on the temperature and pH of the solution and the amount of water present. It is independent of pressure. It has been found that for each 10° rise in temperature, the rate of hydrolysis almost doubles.

145 (d) The % mark-up on prescriptions is 20%, therefore we can say :

For each \$100 cost the retail price is \$120.
For \$2250?

$$= 2250 \times 120 / 100 \\ = \$ 2700$$

For 1000 tabs retail price is \$ 2700

$$\text{For 30 tablets is ?} \\ = 30 \times 2700 / 1000 \\ = \$81$$

146 (b) Decarboxylation. The removal of carboxylic acid groups from the compound is known as decarboxylation.

147 (c) According to the International Pharmaceutical Federation, the maximum % of overages should be limited to 30% over the label potency of the ingredient.

Overages is defined as the addition of an extra active ingredient to balance the potency of the active ingredient due to degradation during its shelf life period.

148 (c) At the concentration of 65% w/w, sucrose retards the growth of microorganisms.

149 (c) Ingram's regimen consists of anthralin and UVB. Anthralin, by its DNA inhibition and antiproliferative action, helps in controlling psoriasis. UVB inhibits the DNA synthesis of epidermal cells.

The combination of Coal tar and UVB is known as Goeckerman region. Coal tar is a mixture of thousands of hydrocarbons which by their enzyme inhibition and antimetabolic actions are useful for psoriasis.

150 (a) Pulmozyme (Dornase alfa) is indicated for the treatment of cystic fibrosis. It reduces the viscosity of sputum by helping in the breakdown of DNA nucleus of neutrophils (due to infection of the lung). Pharyngitis, apnea, voice alternation, and laryngitis are commonly reported side effects of the drug. The recommended dose of the drug is 2.5 mg via inhalation once daily.

151 (a)
$$\text{pH} = \text{pKa} + \log \frac{\text{salt}}{\text{acid}}$$

$$7 = 5 + \log \text{salt/acid}$$

$$2 = \log \text{salt/acid}$$

$$100 = \text{salt/acid}$$

152 (b) Ocusert pilo 20 delivers 20 mg of pilocarpine per hour for 7 days. It is indicated for the treatment of glaucoma.

153 (c) Dorzolamide inhibits the carbonic anhydrase enzyme that is responsible for the production of aqueous humor in the eyes. It is indicated for the treatment of glaucoma.

Timolol is classified as a beta blocker, and it appears to lower the intraocular pressure of the eyes by inhibiting production of aqueous humor. Other agents in this same class are Betaxolol and Levobunolol

Dipivefrine is a prodrug of epinephrine. It is converted into epinephrine by enzymatic hydrolysis inside the eyes. It is a sympathomimetic agent that inhibits the production of the aqueous humor and increases the outflow of the aqueous humor. This results in the reduction of intraocular pressure of eyes.

Latanoprost increases the outflow of the aqueous humor and decreases the intraocular pressure of eyes.

154 (c) According to Fried's formula :

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

$$= \frac{15 \times 325}{150}$$

$$= 32.5 \text{ milligram.}$$

For each 325 mg dose 0.6 cc is required
For 32.5 mg of dose ?

$$= 32.5 \times 0.6/325$$

$$= 0.06 \text{ cc}$$

155 (b) Triphasic oral contraceptives generally affect the follicular, ovulatory and luteal phases of the menstrual cycle and provide a more favorable effect than biphasic and monophasic contraceptives.

It is formulated with a low progesterone content. The only disadvantage associated with the use of triphasic is its lack of availability of uniform direction for taking oral contraceptives.

156 (a) The follicular phase is dominated by estrogen.

157 (c) Metabolic acidosis occurs due to loss of bicarbonate from the body. It stimulates the respiratory center to increase excretion of CO₂ from the body.

It can be further subdivided into metabolic acidosis with normal anion gap and metabolic acidosis with elevated anion gap.

Metabolic acidosis with a normal anion gap generally occurs due to a loss of bicarbonate from the body such as hypokalemia.

Metabolic acidosis with elevated anion gap occurs due to overproduction of organic acids such as lactic acids and formic acids.

It can be corrected by administration of I.V. sodium bicarbonate to an elevate arterial pH.

158 (c) Pyrethrin acts as a contact poison that disturbs the parasites' nervous system. It is used as a scabicide and pediculicide agent.

159 (a) Guaifenesin is a cough expectorant; an agent that may help in excretion of cough. Dextromethorphan, benzonatate and diphenhy-

dramine are antitussive; agents that may suppress the cough production.

160 (b) HbA_{1c} is defined as a stable complex of glucose and hemoglobin. It remains stable up to 120 days. The higher the blood glucose level, the more the fraction of glycosylated hemoglobin will be formed. It indicates the average blood glucose values over 3 to 4 months and helps in assessing overall glycemic control.

A value of HbA_{1c} 6% indicates a plasma glucose concentration of 120 mg/dL. Each 1 % change indicates approximately 30 mg/dL of mean plasma glucose concentration.

161 (d) 4.28 meq.

Equivalent weight = $\frac{\text{molecular weight}}{\text{number of valence}}$

$$\text{Equivalent weight} = \frac{151.85}{2} = 75.92$$

Milliequivalents = $\frac{\text{Weight in milligram}}{\text{equivalent wt}}$

$$= \frac{325}{75.92}$$

$$= 4.28 \text{ meq}$$

162 (d) Insulin therapy is associated with hypoglycemia, lipoatrophy and lipohypertrophy side effects.

Vigorous exercise, overdose of insulin and skipping meals leads to hypoglycemia.

It is recommended to rotate the site of an insulin injection to avoid lipoatrophy.

163 (d) Precose (Acarbose) is classified as an antidiabetic agent. It is indicated for the treatment of diabetes. It inhibits pancreatic alpha-amylase and alpha-glucosidase hydrolase enzymes. This may result in a smaller increase in blood glucose

following meals. It is contraindicated to use in patients with inflammatory bowel disease, colonic ulceration, and intestinal obstruction. Abdominal pain, diarrhea, and flatulence are reported side effects of the drug. The recommended dose of the drug is 25 mg to 50 mg t.i.d. with the first bite of each main meal.

164 (b) Confusion, tachycardia, difficulty in concentration and sweating are common symptoms associated with hypoglycemia. Bradycardia is not a symptom of hypoglycemia.

165 (b) Most oral sulfonylurea agents have been found to produce disulfiram like reactions with alcohol. Chlorpropamide is an oral sulfonylurea agent.

These drugs inhibit the aldehyde dehydrogenase enzyme that is responsible for converting acetaldehyde into acetic acid. The accumulation of acetaldehyde in the body produces throbbing headache, nausea and vomiting, common symptoms associated with disulfiram.

166 (c) Normal renal threshold value for glucose is 180 mg/dl.

167 (b) 250 cc of 0.9% NaCl solution contains 2.25 grams of NaCl.

Meq = $\frac{\text{Weight in milligram}}{\text{Equivalent weight}}$

$$= \frac{2250}{58.5}$$

$$= 38.5 \text{ milliequivalents of Na}^+$$

168 (b) Acarbose is an oral alfa-glucosidase inhibitor used in the management of NIIDM. In the case of hypoglycemia, it is recommended to use dextrose instead of table sugar (sucrose) since Acarbose may block the breakdown of table sugar.

169 (c) 10.34 days.

$$\begin{aligned}t_{1/2} &= 0.693/k \\ &= 0.693 / 0.067 \\ &= 10.34 \text{ days}\end{aligned}$$

170 (b) Vancomycin is indicated for the treatment of antibiotic-induced p.colitis and methicillin resistant infections. Therapy should be closely monitored for ototoxicity and nephrotoxicity. Parenteral administration of Vancomycin is indicated for methicillin resistant types of infections. Oral administration of Vancomycin is indicated for treatment of p.colitis.

Rapid infusion of Vancomycin has been associated with anaphylactoid reactions, hypotension, wheezing dyspnea and urticaria. It may also cause flushing of upper body and pain and muscle spasm of the chest and neck. This syndrome is known as "Red Neck syndrome". These reactions are usually resolved within 20 minutes, but sometimes may persist for several hours.

171 (d) All. The active ingredient of all the mentioned choices is Mesalamine (5-aminosalicylic acid). It is indicated for the treatment of ulcerative colitis. It is chemically related to acetylsalicylic acid. It inhibits cyclooxygenase enzymes and prostaglandin synthesis, resulting in inflammation of the colitis. Anaphylaxis, diarrhea, abdominal cramps, G.I. ulcers and bleeding are reported side effects of the drug. The recommended dose of the drug is 1 gram q.i.d.

172 (b) Excessive secretion of the thyroid hormone causes Grave's disease. Staring eyes, weight loss, soft skin, fast heartbeat, high BMR and a sharp and anxious mind are the symptoms of the Grave's disease.

173 (b) Thyroid hormone deficiency causes cretinism in children and myxedema in adults. The basal metabolic rate is low. A puffy face with dry skin, slow speech, amenorrhea, slow pulse and scanty hair are signs and symptoms of myxedema.

A bloated face with idiotic looks and protruding eye balls are signs of cretinism.

174 (b) Tapazole (Methimazole) is classified as an antithyroid agent. It is indicated for the treatment of hyperthyroidism. The recommended dose of the drug is 15 mg to 40 mg per day. It should be avoided by pregnant women because of the serious side effect of agranulocytosis.

175 (d) All. Liothyronine is associated with numerous side effects such as headache, palpitation, tremor and diarrhea, and is less recommended for treatment of hypothyroidism. Desiccated thyroid preparations have a variable T3 and T4 ratio and therefore are less recommended by physicians. Levothyroxine is the most recommended thyroid supplement for treatment of hypothyroidism.

176 (a) Wellbutrin (Bupropion) is classified as an antidepressant agent. It is indicated for depression and smoking cessation therapy. It reduces the urge to smoke. Seizure is the principal side effect of the drug. The recommended dose of the drug is 100 mg t.i.d.

177 (d) All. Ticlopidine, Aspirin and Clopidogrel are platelets aggregations inhibitor drugs. They are indicated for the prevention of heartstroke. Bleeding is the principal side effects of these drugs.

178 (b) Calcitriol and Dihydroxycholesterol are indicated for the treatment of hypocalcemia by mobilizing bone calcium into blood. They are also indicated for treatment of tetany, idiopathic tetany and hypoparathyroidism.

The other choices such as Estrogen, Calcitonin salmon and Alendronate Na are indicated for treatment of osteoporosis by mobilizing blood calcium into the bone.

179 (d) All. Dihydroxycholesterol is indicated for treatment of tetany, idiopathic tetany and hypoparathyroidism.

180 (c) Cold and clammy skin, convulsion, confusion, respiratory depression and pinpoint pupil constriction are signs of opioid analgesic overdose.

181 (d) 30.13 minutes.

$$\begin{aligned}t_{1/2} &= 0.693 / K \\ &= 0.693 / 0.023 \\ &= 30.13 \text{ minutes}\end{aligned}$$

182 (a) Type I borosilicate glass is most chemically resistant and least leachable. It is composed of silicon dioxide and boric oxide. It has a low thermal coefficient of expansion.

Type II soda-lime treated glass and Type III soda-lime glass are composed of a high proportion of sodium and calcium oxide. This will make glass chemically less resistant.

Both these glasses can melt at low temperatures and have a high thermal coefficient of expansion.

183 (b) A class 100 room is defined as an environment that contains no more than 100 particles per cu ft of 0.5 μm or larger size. Laminar flow of a HEPA filter should meet the standard for class 100 as defined by Federal standard.

A class 10,000 clean room is a conventional clean room so it is less appropriate to carry out aseptic techniques.

184 (b) A HEPA filter is described as a High Efficiency Particulate Air filter. It is employed with Laminar flow for preparation of aseptic parenteral products. It is used for a class 100 clean rooms as defined by Federal standard. Smoke test, DOP test and microbiological essays are applied to find out the efficiency and quality of air provided by a HEPA filter. It has an efficiency of removing 99.97% particles of 0.3 μm or larger.

185 (b) The process of removing 0.2 μm or larger particles, including microorganisms from parenteral solution is defined as "cold sterilization". Removing 2 μm or larger particles from the solution is defined as the polishing of the solution.

186 (a) Lyophilization is a process of drying in which water is removed by process of sublimation after a product frozen. This process is used to store pharmaceutical products which are relatively unstable in aqueous solution or are heat sensitive.

The major disadvantage associated with this process is its high cost.

187 (d) Sterility tests, pyrogen tests and particulate evaluation tests are important quality assurance tests for parenteral solution.

In sterility testing, a sample from the final products are incubated with various cultures to detect the presence of microorganisms. If the growth of microorganisms is found, the sample would be failed sterility test.

In pyrogen testing, the fever produced by the test solution (due to presence of pyrogen) in rabbits is counted as a positive response. Pyrogen tests cannot be used to identify the presence of pyrogens for the type of the solution or drugs which may mask the fever response. Rabbit is the choice of animal for pyrogen tests since it may sensitize to pyrogen the same way as the human body does. The new pyrogen test is known as a Limulus test, and is generally carried out in vitro, based on the formation of gel or color in the presence of pyrogen in the culture of *Limulus polyphemus*. It is more rapid and of greater sensitivity than the rabbit test.

The third test generally puts stress on the presence of any particulate matter. The size of erythrocytes in the blood is 4.5 μm in diameter and therefore particles of more than 5 μm in diameter should be considered the basis of evaluation.

188 (c) Body posture, facial expression and distance of the patient are nonverbal communications. They generally describe the patient's condition. Open ended questions are not a part of nonverbal communication. i.e What kinds of symptoms have you been experiencing ?

189 (b) An HMO (Health Maintenance Organization) is a private or nonprofit organization that includes all the important components of a health care delivery services such as physicians, hospital, and long-term care facilities. They provide these facilities to the consumer by taking a fixed prepaid amount of fees from them. The additional services are also provided for additional payments as the need arises. They offer a combined package of primary physicians, physicians specialized for various diseases, hospitals and long-term care facilities. They are generally classified into four different categories :

Staff model HMO : Staff model HMO generally employs the physicians and owns the facilities. They provide services to a consumer for a fixed monthly fee on a yearly basis. The services provided by this kind of HMO are independent of services used by consumers or patients.

Group model HMO: Group model HMO directly contacts the group of the physicians to provide services to consumers on a capitation basis or on a fee basis.

Independent Practice Association: It is also known as IPA. It is one of the fast growing HMO types that contacts the physician on an individual basis and pays them fees for services with a profit sharing plan.

Preferred Provider Organization: It is basically the same as IPA, except the consumer/patient/member has a choice to select the physician that is out of the HMO network.

190 (d) All. The disadvantage associated with mail-order pharmacy services are :

- I. A lack of pharmacist counseling.
- II. A lack of review of patient's profile.
- III. The use of recycled prescription drugs.

191 (b) To cut down unnecessary hospitalization costs, the Prospective Payment system is introduced. Generally, the consumer/patient pays fixed amounts of fees to its primary insurance company such as Bluecross Blueshield, Signa Health Care etc. When a patient visits the physician for any existing problem, the physician prescribes him unnecessary tests that are not required by the patient. Patients do not care for those tests since he/she have to pay only a fixed amount of fees and the rest of the cost of such tests is fulfilled by primary insurance companies. This is a burden to the insurance companies. To stop unnecessary hospitalization of patient, Congress developed a prospective payment system. This system precalculates (by considering all the factors) the cost of hospitalization associated with particular disease. For Example, the cost of hospitalization for coronary bypass surgery (including minimum days required to stay in hospital, physician fees of hospitals, rent of room for hospital etc.) is listed as \$ 2000. If the hospital produces a bill for \$5000, the insurance will only pay \$ 2000 as listed under DRG (Diagnosis Related Groups). This will discourage hospitals from keeping the patient for a longer time then required to save health care cost burden.

Normally the prospective payment system is interpreted as any service cost you pay in advance for services that have not been provided yet or may be provide in the future such as fixed monthly premium of insurances.

In a retrospective payment system you pay for the services after service completed such as paying the hospital at the time of discharge.

192 (c) Most hospitals are now ordering their medications from only one wholesaler and pay a small fee for the service (provided by the wholesaler) This is known as the Prime Vendor System.

193 (b) Drugs that are dispensed under the floor stock system are generally classified into two categories.

- I Free floor stock system
- II Charge floor stock system

Free Floor stock system: In hospitals, each nursing unit has a predetermined list of medications that can be given to patients free of charge such as acetaminophen, bisacodyl etc. These medications are not expensive and used in large quantities. The charge of such medications is generally included in the cost of hospital room.

The inventory of such medications is usually done on a spot basis by a pharmacy technician on a predetermined day of week.

Charge floor stock system: There are certain drugs that require immediate use after the physician prescribes them such as antibiotics, and certain pain medications. It is not practical to go to pharmacy each time to obtain them, and they must require be charged to a patient.

When a nurse removes such medications from a cabinet, he/she will pull the preprinted label from the medication and affix it to the inpatient prescription. This is used later for the replacement of drugs and to charge the patient.

194 (b) Gaze is not a vocal qualities. Pitch, tone and range express the qualities of personal voice.

195 (a) Closed ended questions should be answered only in the form of “yes” or “no”.

To better serve the patient, pharmacists must develop skills of an active listening. Ask open-ended or direct questions, and interpret non-verbal communication (face expression, body posture, eye reflection, distance of the patient) successfully.

Active listening: This will allow the patient to define the problem completely. A pharmacist has to listen to the patient with complete attention. After a patient’s speech is complete, the pharmacist has to assure him that he understood his medical problem and medical needs thoroughly.

Open-ended questions : This skill initiates patients to speak about their problems i.e. tell me about the symptoms you have been experiencing?

Direct-ended question: This type of question emphasizes on a specific inquiry, i.e. how long have you noticed pain in your bladder?

Nonverbal communication : Interpretation of nonverbal communication gives an idea about the patient’s existing disease condition. i.e. facial expression, eye reflection, hand gestures, body posture.

196 (c) 1 drop to both eyes four times a day for 10 days.

197 (c) \$ 30

$$\begin{aligned} \text{Retail price} &= \text{CD} + \text{CD} \times \% \text{ mark up} \\ &= \$ 20 + \$ 20 \times 0.5 \\ &= \$ 20 + \$ 10 \\ &= \$ 30 \end{aligned}$$

CD = Cost of drug

198 (b) \$ 71

$$\begin{aligned} \text{Retail price} &= \text{CD} + \text{Professional fee} \\ &= \$ 65 + 6 \\ &= \$ 71 \end{aligned}$$

983. (d) Hecorol (Doxercalciferol) is indicated for the reduction of elevated iPTH levels in the management of secondary hyperparathyroidism in patients undergoing chronic renal dialysis. It is a synthetic vitamin D analog which undergoes metabolic activation to 1-alpha-25 dihydroxy vitamin D₂, an active form of Vitamin D₂.

984. (c) Phoslo (Calcium acetate) is indicated for the treatment of hyperphosphatemia in end stage renal failure. The recommended dose of PhosLo for the adult dialysis patient is 2 tablets with each meal.

985. (b) Reye's syndrome is a rare but serious illness reported with aspirin or aspirin containing products. Aspirin (Acetylsalicylic acid) is indicated for treatment of pain. It is also used to reduce the risk of stroke in CHF. The recommended dose of the drug for pain is 325 mg every 4 to 6 hours as needed. GI. ulcer and bleeding are reported side effects of the drug.

986. (c) The active ingredients of Avalide are Irbersartan and Hydrochlorothiazide. It is indicated for the treatment of hypertension. Irbersartan is an Angiotensin II receptor antagonist. The recommended dose of drug is 150/12.5 mg to 300/25 mg per day. It should be given once daily.

987. (b) Lactic acidosis is a rare but serious side effect associated with Glucophage (Metformin) therapy. It is characterized by elevated blood lactate levels (> 5mmol/L). Glucophage is indicated for the treatment of diabetes. The recommended dose of the drug is 500 mg b.i.d.

988. (b) Glucophage (Metformin) normally decreases hepatic glucose production and intestinal absorption of glucose. It also improves insulin sensitivity by increasing peripheral glucose uptake and utilization.

989. (c) Plavix (Clopidogrel) is an inhibitor of platelets aggregation. It is indicated for the reduction of atherosclerotic events such as myocardial infarction, stroke, and vascular death. The recommended dose of drug is 75 mg once a day with or without food.

990. (d) Pravachol (Pravastatin) is an HMG COA inhibitor. It is indicated for the treatment of atherosclerosis with elevated lipid level. The recommended dose of drug is 10, 20 or 40 mg once day. It can be administered at any time of the day.

991. (b) Serzone (Nefazodone) is indicated for the treatment of depression. It is structurally unrelated to SSRI, MAO inhibitor and TCA. The recommended dose of drug is 200 mg day in two divided doses. The drug should be carefully used with terfenadine, astemizole, cisapride, TCA and MAO inhibitor.

992. (b) Stadol NS (Butorphanol) is the opioid analgesic available in nasal formulation. It is indicated for the treatment of pain. It is a mixed agonist-antagonist type. The recommended dose for initial nasal administration is 1 mg (one spray in nostril). If adequate pain relief is not achieved within 60-90 minutes, an additional 1 mg dose may be given.

993. (b) Pulmonary fibrosis is the most severe adverse effect associated with Bleomycin. It is indicated for the treatment of Squamous cell carcinoma, non-Hodgkin's lymphoma and testicular carcinoma.

994. (d) Cystic fibrosis is an autosomal recessive disorder in which defective CFTR proteins are found. The CFTR facilitates the transport of chloride ions across the membrane of epithelial lined cells. The altered chloride transport results in altered sodium and water distribution, causing thickened epithelial secretions and mucus. This will lead to pulmo-

nary, gastrointestinal, pancreatic, and hepatic manifestations.

995. (b) Droxia (Hydroxyurea) is indicated to reduce the frequency of painful crises and to reduce the need for blood transfusions in adult patients with sickle cell anemia.

996. (b) $PH = PK_w - PK_b + \log \text{base/salt}$

$PH = PK_a + \log \text{base/salt}$ ($PK_a = PK_w - PK_b$)
 $10 = 8 + \log \text{base/salt}$
 $\log \text{base/salt} = 2$ and therefore,

$\text{base/salt} = 100 : 1$.

997. (a) LDL (Low Density Lipoproteins) is the major cholesterol carrying lipoprotein in human plasma. It is derived from catabolism of VLDL. This process normally occurs in blood vessels. LDL is converted into cholesterol by the enzyme HMG COA reductase. This is the rate limiting step in synthesis of cholesterol. LDL is involved in the transport of cholesterol to peripheral tissues and is potentially atherogenic, whereas HDL is involved in the transport of cholesterol from the periphery to the liver and is antiatherosclerosis.

998. (a) The active ingredient of Mesnex (Mesna) is sodium-2mercaptoethane sulfonate. It is indicated as a prophylactic agent in reducing the incidence of ifosfamide-induced H.cystitis.

999. (c) Glycogen storage disease is also known as Mcardle's disease. It is an inborn error of the metabolism in which a deficiency of the enzyme Myophosphorylase is found. It prevents the breakdown of glycogen to lactate in exercising muscles. This results in fatigue, pain, and cramps in exercising muscles.

1000. (a) Nausea, vomiting and bone marrow suppression are dose related side effects of

Carboplatin. It is indicated for the treatment of ovarian carcinoma.

*****END*****

Table-1

<u>Name</u>	<u>Causative organism</u>	<u>Recommended dose</u>
Diphtheria	Corynebacterium diphtheria	Adult dose, boost every 10 years.
H.Influenza b	H.influenza	Most children have 3 to 4 doses between age 2 months to 15 months.
Hepatitis A	HAV	3 doses at 1 month, 6 to 12months old infant and for patients age 2 years to 18 years, while 2 doses every 6 months to 1 year apart for patients age more than 18 years.
Hepatitis B	HBV	3 doses at 1 to 2 months old infants and adults.
Influenza	Influenza	1 dose every year
Measles, Mumps and Rubella	Measles, Mumps and Rubella	2 MMR vaccine at 12-15 months of age and again at 4 to 6 years of age.
Pertussis	B.Pertusis	It should be given to children aged 6 weeks to 7 months.
Poliomyelitis	Polio virus	It should be given at 2 months, 4 months, 12-18 months and at 4 to 6 years.
Pneumococcal	S. pneumonia	1 dose
Tetanus	Clostridium tetani	3 to 4 doses plus booster every 10 years.

Table-2

Drugs with prolong half life

- * Chlorpropamide
- * Corgard
- * Piroxicam
- * Amiodarone
- * Bromocriptine
- * Azithromycin
- * Clofazimine

Table-3

DISULFIRAM REACTION PRODUCING DRUGS

- * Metronidazole
- * Chlorpropamide
- * Cefotetan
- * Cefoperazone
- * Moxalactam
- * Cefamandole
- * Tolbutamide
- * Acetohexamide
- * Glyburide
- * Glipizide
- * Disulfiram

DRUGS THAT PRECIPITATE DISULFIRAM-LIKE REACTIONS WITH TABLE-3

- * Alcohol
- * Benadryl Elixir
- * Digoxin Elixir
- * Lanoxicap

PLATELET AGGREGATION INHIBITORS

- * Cefamandole
- * Cefoperazone
- * Moxalactam
- * Cefotetan
- * Plicamycin
- * Ketorolac
- * Aspirin
- * Ticlid
- * Plavix

URINE DISCOLORATION PRODUCING DRUGS

- * Phenazopyridine
- * Senna
- * Rifampin
- * Phenolphthalein
- * Levodopa
- * Sulfasalazine

DRUGS THAT REQUIRE PATIENTS PACKAGE INSERT

- * Isotretinoin
- * Oral contraceptive
- * Isoproterenol
- * Ticlid
- * Progesterone
- * Estrogen
- * Intrauterine device

DRUGS CONTRAINDICATED IN PREGNANCY

- * Isotretinoin
- * Tetracycline
- * Chloramphenicol
- * Sulfonamide
- * Misoprostol
- * Finasteride
- * Methimazole
- * Coumadin
- * Metronidazole
- * Valproic acid
- * Lithium carbonate
- * Alcohol

DRUGS & THEIR NORMAL BLOOD THERAPEUTIC CONCENTRATIONS

* Digoxin	0.7 to 1.4	ng/ml	Primidone	04 to 12	mcg/ml
* Phenytoin	10 to 20	mcg/ml	Vancomycin	05 to 15	mcg/ml
* Amikacin	10	mcg/ml	Lithium	0.6 to 1.2	mEq/L
* Carbamazepine	10 to 20	mcg/ml	Valproic acid	40 to 100	mcg/ml
* Gentamicin	2	mcg/ml	Haloperidol	05 to 20	ng/ml
* Tobramycin	2	mcg/ml			
* Fosphenytoin	10 to 20	mcg/ml			
* Theophylline	10 to 20	mcg/ml			
* Streptomycin	5	mcg/ml			
* Digitoxin	09 to 25	mcg/ml			
* Quinidine	02 to 06	mcg/ml			
* Carbamazepine	04 to 12	mcg/ml			
* Phenobarbital	10 to 40	mcg/ml			

ANTIDOTE OF DRUGS

DRUGS

Naloxone=Narcan

Opioid

Nalmefene=Revex

Opioid

Naltrexon= Revia

Opioid

Digoxinab=Digibind

Digoxin, Digitoxin

LeucovorinCa⁺²= Wellcovorin

Methotrexate, Trimethoprim, Pyrimethamine

Mesna = Mesnex

Cyclophosphamide, Ifosfamide

Vitamin K

Coumadin

Protamine sulfate

Heparin

Deferoxamine mesylate= Desferal

Iron

Dimercaptol

Arsenic, Gold

Sodium thiosulfate

Cyanide

Flumazenil=Romazicon

Benzodiazepine

Physostigmine=Antilirium

Atropine, Anticholinergic

Acetylcysteine= Mucomyst

Acetaminophen

Dexrazoxane=Zinecard

Doxorubicin

Pralidoxime = Protopam cl

Organophosphorus compound

Glucagon

Insulin

Edetate disodium

Digitalis toxicity, hypercalcemia

Edetate calcium disodium

Lead

Atropine

Acetylcholine, Cholinergic agent

Hydroxocobalamin

Cyanide

Drugs that cause photosensitivity reaction

* Accutane	* Cipro	* Rheumatrex
* Micronase	* DiaBeta	* Sulfonamide
* Retin-A	* Doxycycline	* Tetracycline
* Bactrim	* Griseofulvin	* Thiazide diuretic
* Carbamazepine	* Methotrexate	* Tricyclic antidepressant
* Sulfonyleureas	* Noroxin	* Glucotrol

Abbreviations

* aa	of each	* D.A.W	dispense as written
* N and V	nausea and vomiting	* gtt	drop
* a.c.	before meals	* a.m.	morning
* p.c.	after meals	* p.m.	evening
* a.d.	right ear	* h.s	at bed time
* a.s.	left ear	* o.d.	right eye
* a.u.	both ears or each ear	* o.s.	left eye
* q.d	daily	* o.u.	both eyes or each eye
* b.i.d.	twice daily	* o ₂	both eyes
* t.i.d	three times daily	* p.o.	by mouth
* q.i.d	four times daily	* pr	per rectum
* q.o.d	every other day	* q.6h	every 6 hours
* pt.	pint	* prn	as needed

Drugs that cause enzyme induction

- * Rifampin
- * Carbamazepine
- * Phenobarbital
- * Troglitazone
- * Phenytoin
- * Nicotine
- * Omeprazole
- * Rifabutin

Drugs that cause enzyme inhibition

- | | |
|----------------|---------------|
| * Cipro | * Clopidogrel |
| * Cimetidine | * Ritonavir |
| * Erythromycin | |
| * Fluvoxamine | |
| * Ketoconazole | |
| * Nelfinavir | |

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	=	$(\text{gal} \times \% \text{ v/v strength}) / 50\% \text{ v/v}$			
*	% strength	=	proof spirit / 2			
*	Proof gal	=	$(\text{gal} \times \text{proof spirit}) / 100$			
*	PV	=	nRT			
*	PV	=	W/M x R x T			
*	Equivalent wt	=	molecular weight / number of valence			
*	mEq	=	equivalent weight in mg / 1000			
*	mOsmol/L	=	$(\text{weight of substance [g/L]} \times \text{no of species} \times 1000) / \text{mol wt}$			
*	pH	=	$\text{pKa} + \log (\text{salt/acid})$			
*	Young (child)	=	$(\text{age in years} / \text{age} + 12) \times \text{adult dose}$			
*	Clark's	=	$(\text{weight in lbs} / 150) \times \text{adult dose}$			
*	Child's dose	=	$(\text{body surface area of child} / 173 \text{ mm}^2) \times \text{adult dose}$			
*	Fried's rule	=	$(\text{age in months} / 150) \times \text{adult dose}$			
*	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			

Stool discolor producing drugs

<u>Drug</u>	<u>Color</u>
Rifampin	Red orange
Phenolphthalein	Red
Pyriminium	Red
Antacid	White
Kao-pectin	Black
Iron salt	Black brown
Warfarin	Black

Drugs that need to be stored in refrigerator

Calcimar	Wycillin (Injection)
Xalatan (ophthalmic solution)	Bicillin (Injection)
Viroptic (ophthalmic solution)	Permapen (Injection)
Ophthetic (ophthalmic solution)	Intron-A (Injection)
Fluorocaine (ophthalmic solution)	Epogen (Injection)
Occusert Pilo	Neupogen (Injection)
Phospholine Iodine (ophthalmic solution)	Hyperstat (Injection)
Erythromycin Ethyl Succinate Suspension	Sandostatin (Injection)
Promethazine suppository	Novolin (Injection)
Fosphenytoin (Injection)	Humulin (Injection)
Bicillin-LA (Injection)	Regranex (Cream)
Mose (Injection)	
Harvix-A (Injection)	
Neupogen (Injection)	
Thyrolar	
Mycostatin pastilles	
Fortovase capsules	
Norvir Capsules	
Calcitonin Salmon (Injection, nasal spray)	
Bacid (dietary supplement)	
Lactinex (dietary supplement)	
Sterile Bacitracin powder	
Diltiazem injection	
Pepcid injection	
Urokinase	
Sus-Phrine (injection)	
Dornase-alpha	
Tetanus Toxoid	
Hepatitis-A	
MMR vaccine	

Pancrelipase supplement products

Ku-Zyme-HP
Viokase
Creon
Cotazym
Ilozyme
Festal

List of drugs that should not be used by patients with Belladonna alkaloids or Phenobarbital allergy

Barbidona
Kinesed
Spasmophen
Donnapine
Hyosophen
Spaslin
Spasmoline
Relaxadon
Malatal

List of drugs available in Depot preparation

Haloperidol Decanoate	=	Haldol
Fluphenazine Decanoate	=	Prolixin
Methylprednisolone	=	Depo Medrol
Medroxyprogesterone	=	Depo Provera
Estradiol	=	Depo Estradiol
Luprolide	=	Lupron Depot

List of the drugs that should not be used by patients with Sulfonamide allergy

Sulfonamide	Diazoxide
Oral sulfonyleurea	Celebrex
Thiazide diuretic	
Dapsone	

List of drugs that should not be used by patients with TCA allergy

Tricyclic antidepressant
Carbamazepine
Cyclobenzaprine

List of drugs that are available in Transdermal dosage form

<u>Name of Drug</u>	<u>Need to change</u>
Climara	Once a week
Catapres	Every day
Estradiol	Twice a week
Nitrodur	Applied in morning and remove in the evening
Transdermal nitro	Applied in morning and remove in the evening
Deponit	Applied in morning and remove in the evening
Nicoderm	Every 24 hours
Prostep	Every 24 hours
Habitrol	Every 24 hours
Nicotrol	Applied upon awakening and remove at bed time
Duragesic	Every 72 hours
Transderm scop	Every 72 hours

***** END *****

