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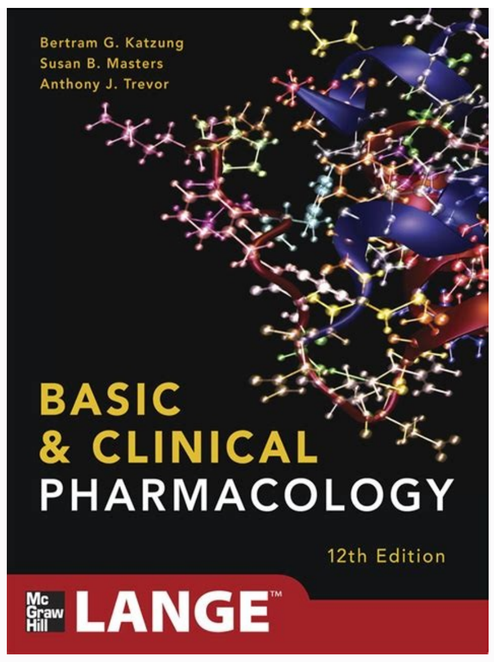

General rules of chemotherapy

- **Aggressive high-dose chemotherapy**
  - **Dose**- limiting is toxicity towards normal cells
- **Cyclic regimens** - repeated administrations with appropriate intervals for regeneration of normal cells (e.g., bone marrow cells)
- **Supportive therapy -** to reduce toxicity
  - hematotoxicity – bone marrow transplantation, hematopoietic growth factors
  - Specific antagonists: antifolate (methotrexate) – folate (leucovorin)
  - MESNA - donor of –SH groups, decreased urotoxicity of cyclophosphamide. Detoxifying agent.
  - dexrazoxane: chelates iron, reduced anthracycline cardiotoxicity
  - amifostine: reduces hematotoxicity, ototoxicity and neurotoxicity of alkylating agents

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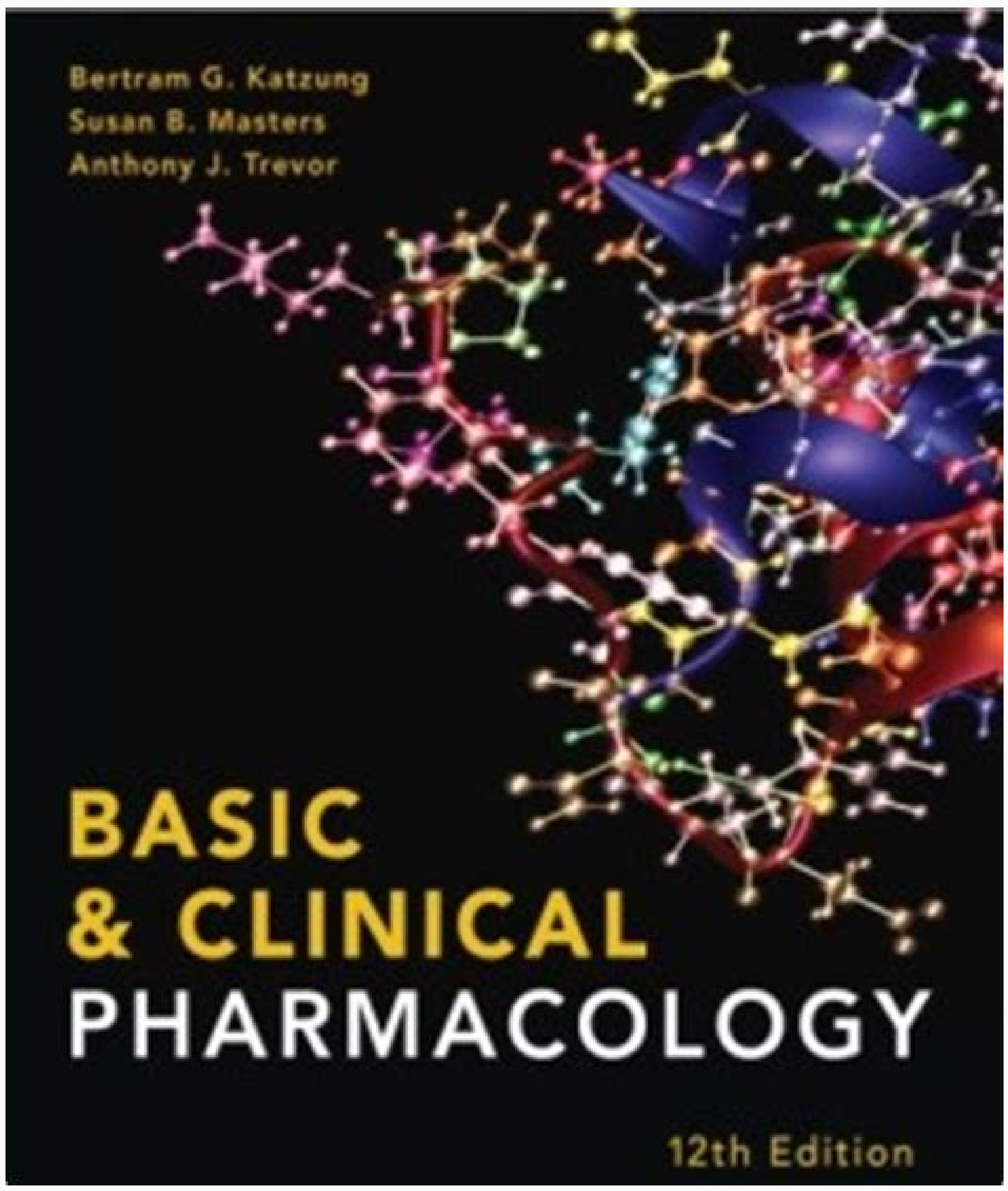

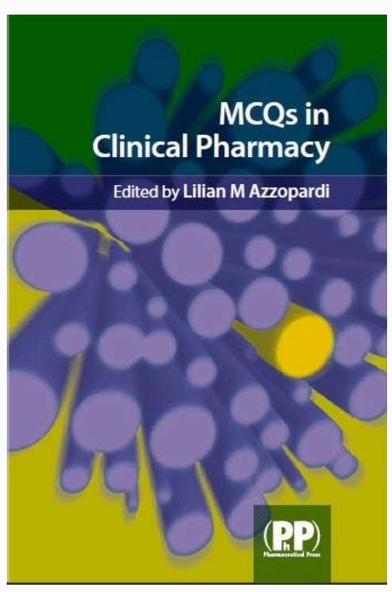

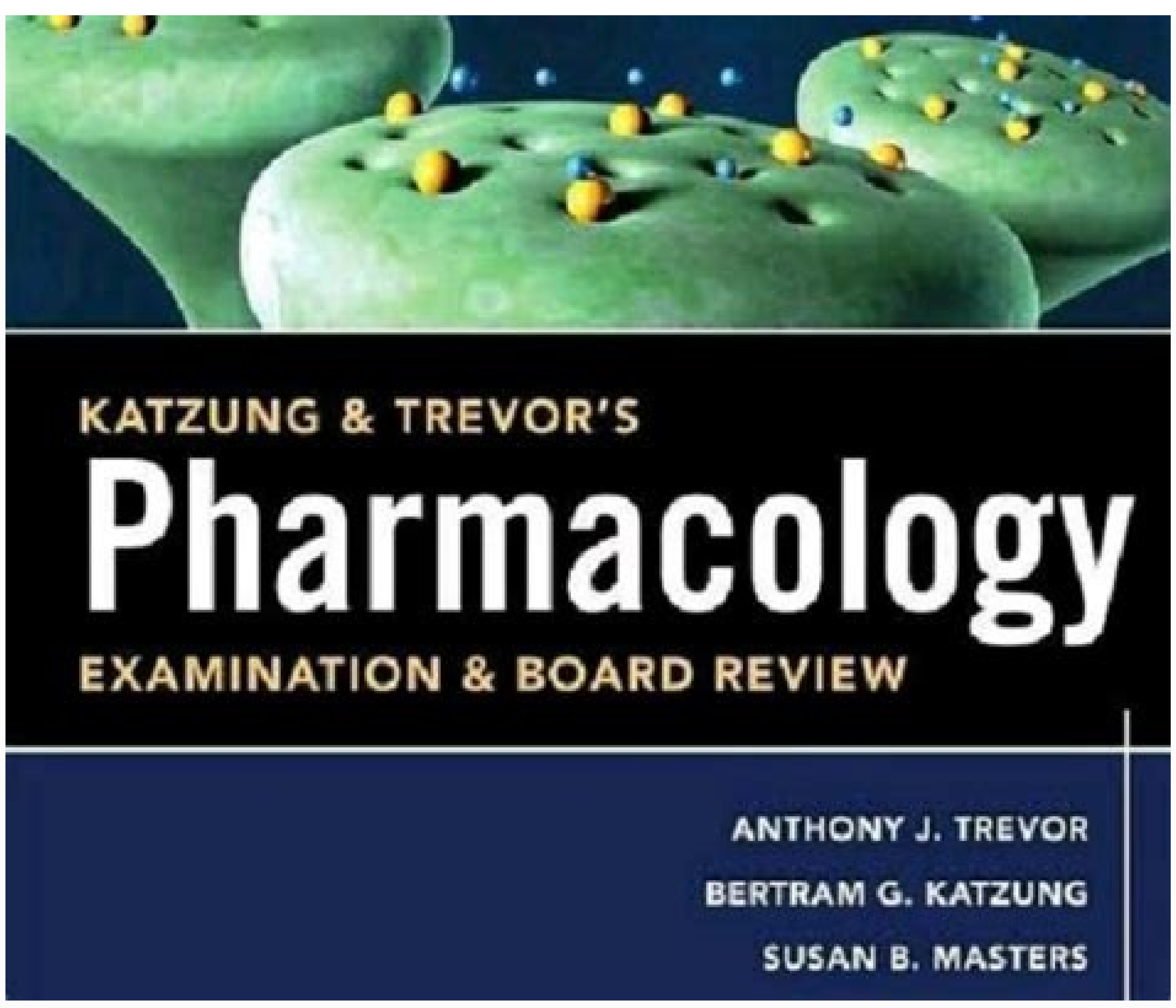

In this post we are giving you a quick review on APharmacology MCQS PDF. As we know surgery is subject that need mastering in human anatomy before mastering in surgery. You will have came across many book in surgery to improve your concept and mastering the practical surgery procedure. Pharmacology is the study of drugs and its action. Pharmacology is one of the hard subject in medical science. Without a knowledge of pharmacology one can not be a good doctor. Because without knowing the drugs you can never treat a disease. There are many good books of pharmacology like lippincott pharmacology, Tara shanbhag pharmacology. You can download these books in pdf format by using the link. You can also download the pharmacology mcqs book at the end by using the link. This book contain more then 1700 MCQ's on Pharmacology which have sufficient practice questions for pharmacy competitive exams like GPAT USMLE. Pharmacology is one of the volatile subject and for examination you used an easy way to memorized it. Now a days all examination are mcqs based and without make a full concept of topics you will face a difficulty in solving MCQs and SEQs. Pharmacology mcqs is very thought in examination and students faces a lots of problems in solving this. The book "MCQs in Pharmacology-A Complete Guide of MCQs for Medical " by M.D. Waris Malik is the best guide for Students and Aspirants who are preparing for Medical Exam. These questions have been intended for self-evaluation and amendment. Be that as it may, the main estimation of the book lies in the definite informative content which goes with each MCQ. This book is proposed for understudies of the drug stores and medication. It will likewise be valuable in giving thoughts and material to use by showing staff and inspectors. It will be particularly helpful for the college understudies of a drug store and medication who are getting ready for postgraduate selection tests. Pharmacology MCQs Book PDF Review: This pharmacology have mcqs of all books like lippinacot pharmacology, Ketzung Pharmacology and Rang and Dale Pharmacology and etc. The book is best for all type of examination all around the globe. MCQs is given along with answer key. You must used the book with your textbook of pharmacology. Students used this book to practice and test itself. To study the book in pdf format on your pc, Laptop, Mobile and Tablet. You can download the pdf of the book at the end by using the link. Download Pharmacology MCQs PDF Free: You can download the PDF by clicking the download link. If the download link does not working kindly inform us through the comments section, we will updated you soon. Click to download pdf " NOTE: We do not own copyrights to these books. 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If you feel that we have violated your copyrights, then please contact us immediately.We're sharing this with our audience ONLY for educational purpose and we highly encourage our visitors to purchase original licensed software/Books. If someone with copyrights wants us to remove this software/Book, please contact us. immediately. You may send an email to for all DMCA / Removal Requests. KAU Faculty of Medicine Third Year Medicine Pharmacology Core Corse Pharmacology - Common MCQs General Pharmacology (First 5 Lectures) Topic Exam Questions (115 MCQs) Problem Solving Questions (22 MCQs) Lippincott's Questions (11 MCQs) Katzung's Questions (60 MCQ) Problem Solving Questions (Katzung) Total = 208 MCQs Page 2 22 27 29 38 General Pharmacology MCQs Exam Questions (115 MCQs) : 1. Binding of a drug to plasma proteins will tend to: A. Decrease half-life. B. Decrease its rate of glomerular filtration. C. Increase its rate of biotransformation. D. Increase its concentration in the plasma. E. Increase its pharmacological activity. 2. Dose-response curves are used for drug evaluation in the animal laboratory and in the clinic. Quantal dose-response curves are A. Used for determining the therapeutic index of a drug B. Used for determining the maximal efficacy of a drug C. More precisely quantitated than ordinary graded dose-response curves D. Obtainable from the study of intact subjects but not from isolated tissue preparations E. Used to determine statistical variation (standed deviation) of the maximal response to the drug 3. Compared to the average adult dose, the recommended dose of a drug for elderly patients will likely be: A. Less than average due to increased biotransformation. B. Less than average due to decreased renal function or excretion C. More than average due to decreased plasma protein binding capacity. D. More than average due to increased renal excretion. E. Totally unpredictable. 4. Which one of the following statements is applicable to absorption of drugs from the gastrointestinal tract? A. Absorption of weak acids occurs only from the stomach and not from the small intestine. B. Some drugs are metabolized extensively by the liver and do not reach the general circulation (first-pass effect) C. All the drugs are stable at the low pH of the stomach. D. Rectal administration is the best way to give irritating drugs. E. Ingesting drugs with food always enhances drug absorption. 5. Which of the following statements about spare receptor is MOST correct A. Spare receptors, in the absence of drug, are sequestered in the cytoplasm B. Spare receptors may be detected by finding that the drug-receptor interaction longer than the intracellular effect C. Spare receptors influence the maximal efficacy of the drug-receptor system D. Spare receptors activate the effector machinery of the cell without the need for a drug E. Spare receptors may be detected by the finding that the EC50 is smaller than the Kd for the agonist |Page٢ General Pharmacology MCQs 6. A patient is treated chronically with a drug (A) metabolized by CYP 3A4. Recently he administer another drug (B) which is an enzymatic inducer of the CYP2D6.Which of the following is likely to occur: A. Longer half life of drug (A) B. Longer half life of drug (B) C. Enhanced pharmacological effect of drug A D. No significant drug interaction E. Reduced pharmacological effect of drug B 7. All of the following are applicable to the concept of the blood-brain barrier EXCEPT: A. Restricts the entry of hydrophilic compounds into the brain. B. Has as one component, endothelial cells with pores accessible only by compounds of less than 200 Daltons. C. Is penetrated only by organic solvents which are used as general anesthetic agents. D. Is between the plasma space and the interstitial space of the brain. E. Drugs which are well absorbed from the G.I.T penetrate well into the brain. 8. What happen if valproic acid (strongly bound to albumin) and imipramine, a tricyclic antidepressant (bound to alpha acid glycoprotein) A. Potential toxicity of valproic acid. B. significant increase in free level of both drugs. C. Enhanced biotransformation of valproic acid. D. increase in volume of distribution of imipramin E. No interference in protein binding is expected / No pharmacokinetic drugdrug interaction is expected 9. A drug with half life of about 24h was prescribe orally at the dose of 100mg once daily. After two weeks, the dose was changed to, 200mg once daily. Following this change in treatment: A. The mean plasma concentration doubles. B. The plasma half life of the drug doubles C. the difference between the maximum plasma concentration (peak) and minimal (trough) become very small. D. the volume of distribution of the drug double. E. The time required to reach the steady state of concentration decrease by a half 10. In general, biotransformation usually results in a product which is more: A. Likely to produce side effects. B. Likely to distribute intracellularly. C. Lipid soluble than the original drug. D. Likely to be reabsorbed by kidney tubules. E. Water soluble than the original drug. |Page٣ General Pharmacology MCQs 11. For a drug eliminated by a first-order kinetic process: A. A constant amount of drug is eliminated per unit time. B. The duration of action will be longer than for a drug eliminated by zero-order process. C. The elimination rate constant will be independent of the dose administered. D. It is unlikely to bind significantly to plasma albumin. E. The apparent volume of distribution will vary with time. 12. Enzyme inhibitors such as Cimetidine and Erythromycin are likely to produce: A. Increase rate of breakdown of some drugs B. increase free level of some drugs C. inhibition of certain enzymes which break down some drugs. D. improvement of bioavailability of some drugs E. Reduction the toxicity of some drugs. 13. A competitive reversible antagonist : A. Shifts the dose-response curve of an agonist to the right. B. Decreases the maximal response produced by agonists acting on the same receptor. C. Produces an effect which is mathematically equivalent to decreasing the efficacy of the agonist. D. Increases the efficacy of the agonist. E. Binds to the receptor by covalent bonding. 14. Regarding binding of drugs to plasma albumin: A. All drugs are strongly bound to albumin. B. Binding of drugs enhance there therapeutic effects. C. Binding of drugs to albumin enhance their elimenation. D. Albumin binds reversibly certain acidic drugs. E. drugs bound to albumin crosses membranes easily. 15. An experiment was performed to determine the median effective dose (ED50) for causing hypnosis and the median lethal dose (LD50) of a drug. The ED50 was found to be 1 mg. The LD50 was found to be 300mg. What is the therapeutic index for this drug? A. 300. B. 30. C. Less than 10. D. 3. 16. The following statement concerning pre-systemic metabolism are true except: A. is the metabolism of administrated drugs before reaching systemic circulation. B. it can be avoided by giving the drug via another route of administration. C. it usually leads to decrease drug bioavailability. D. drugs with extensive first pass effect may be ineffective orally. E. it is usually occurs due to enzyme induction or inhibition. |Page٤ General Pharmacology MCQs 17. Which of the following is a receptor that is not located on the plasma membrane? A. Nicotinic receptor. B. Muscarinic receptor. C. G protein. D. Adenylyl cyclase. E. Steroid receptor. 18. Enzyme inducers, such as phenyoin and carbamazepine are likely to produce: A. An increase in bioavailability of many drugs. B. decrease of absorption of many other drugs. C. An increase in effect of many other drugs D. a possible acceleration of the catabolism of certain other drugs E. a decrease in protein binding of many drugs 19. The following statements concerning drugs metabolism are true. Except: A. Metabolites are generally more polar than parent drug. B. metabolites are usually inactive or less active than the parent drug. C. neonates have deficiency in phase II (conjugation) metabolic pathway. D. metabolizing enzyme can't be inhibited by other drugs. E. the rate of metabolism by certain CYP are genetically. 20. Substances strongly suspected or known to be capable of harming the fetus when consumed by a pregnant woman include all of the following EXCEPT: A. Sex hormones. B. Oral anticoagulants (warfarin). C. Alcohol. D. Anticancer (cytotoxic) drugs. E. Penicillins. 21. Which of the following names best describes an antagonist that interacts directly with the agonist and not at all, or only incidentally, with the receptor A. Chemical antagonist B. Noncompetitive antagonist C. Partial agonist D. Pharmacologist antagonist E. Physiologic antagonist 22. The following route of administration is likely to associated with significant first pass effect observed with certain drugs: A. oral B. sublingual C. intramuscular D. Rectal E. transdermal. |Page٥ General Pharmacology MCQs 23. All of the following statements regarding adverse drug reactions are correct EXCEPT? A. Pharmacokinetic mechanisms are unimportant in causation. B. Young children cannot be regarded as "small adults" as far as liability to adverse drug reactions is concerned. C. The first few weeks of life is a period of special risk. D. Old age is a period of special risk. E. Atmospheric pollution in hospitals may be a cause. 24. All the following statements regarding adverse drug reactions are correct EXEPT: A. Pharmacokinetic mechanisms are unimportant in causation. B. Young children cannot be regarded as "small adults" as far as liability to adverse drug reactions is concerned. C. The first few weeks of life is a period of special risk. D. Re-exposure to a small dose is enough to cause illness. E. Atmospheric pollution in hospitals may be a cause. 25. Which of the following provides information about the variation in sensitivity to a drug within the population studied A. Drug potency B. Graded-dose-response curve C. Maximal efficacy D. Quantal dose-response curve E. Therapeutic index 26. kinetic that are characteristic of elimination of ethanol, high dose of aspirin and phenytoin are called: A. distribution B. excretion C. first pass effect D. first order elimination E. zero order elimination 27. The following statements concerning renal elimination of drug are true. Except: A. alklinization of urine will enhance elimination certain acidic drugs. B. measurement of creatinine clearance can be used for assessment of renal function. C. some drugs are mainly eliminated by kidney D. renal elimination is greatly affected by age & gender. E. most drugs are eliminated by active tubular secretion 28. All of the following are phase I biotransformation reactions EXCEPT: A. Sulfoxide formation. B. Sulfate conjugation. C. Nitro reduction. D. Ester hydrolsis. E. Deamination. |Page٦ General Pharmacology MCQs 29. Important manifestations of drug allergy include all of the following EXCEPT: A. Thrombocytopenia. B. Leukemia. C. Aplastic anemia. D. Hemolysis. E. Granulocytopenia. 30. Which of the following most accurately describes the transmembrane signaling process involved in steroid hormone action? A. Action on a membrane-spanning tyrosine kinase? B. Activation of G protein, which activates or inhibits adenyl cyclase. C. Diffusion across the membrane and binding to an intracellular receptor. D. Diffusion of STAT molecules across the membrane. E. Opening of the transmembrane ion channnel. 31. Variation in the sensitivity of a population of individuals to increasing doses of a drug is best determined by which of the following? A. Efficacy B. Potency C. Therapeutic Index D. Graded dose-response curve E. Quantal dose-response curve 32. In the absence of other drugs, pindolol causes an increase in heart rate by activating beta adrenoceptors. In the presence of highly effective beta stimulants. However, pindolol causes a dose-dependant, reversible decrease in heart rate. Therefore, pindolol should be classified as A. A chemical antagonist B. An irreversible antagonist C. A partial agonist D. A physiologic antagonist E. A spare receptor agonist 33. All of the following statements related to the binding of drugs by plasma proteins are correct EXCEPT? A. Bound drug is unable to diffuse into tissue until it becomes unbound. B. A drug that is bound by plasma proteins will have a smaller apparent volume of distribution than if it were not bound. C. Displacement of the bound drug by another drug can increase the effects of a given dosage of the first drug. D. Acidic drugs are bound mostly to plasma albumin. E. bound drug is the pharmacologically active part of the drug. 34. The term that refers to the rapid diminution of responsiveness following administration of a drug is: A. Hyporeactivity. B. Tachyphylaxis. C. Idiosyncratic drug response. D. Tolerance. E. Drug inactivation. |Page٧ General Pharmacology MCQs 35. Correct statements concerning characteristics of a particular route of drug administration include all of the following EXCEPT: A. Intravenous administration provides a rapid response. B. Oral administration requires that the patient be alert. C. Intramuscular administration requires sterile technique. D. Subcutaneous administration may cause local irritation. E. Inhalation provides slow access to the general circulation. 36. Factors affecting drug bioavailability include the following except: A. its physiochemical properties (molecular weight, stability in GIT etc) B. binding of drugs to plasma protein (albumin or a-acid glycoprotein) C. dosage form (table, syrup etc) D. physiological & pathological variables (gastric emptying time, diarrhea) E. its interaction with food or other drugs. 37. Which one of the following is TRUE for a drug whose elimination from plasma shows first-order Kinetics? A. The half-life of the drug is proportional to the drug concentration in the plasma. B. The amount eliminated per unit time is constant. C. The rate of elimination is proportional to the plasma concentration. D. Elimination involves a rate-limiting enzymic reaction operating at its maximal velocity (Vm). E. A plot of drug concentration versus time is a straight line . 38. According to alphabetical classification of types of adverse drug effects, anaphylaxis from penicillin injection is an adverse drug effect type: A. A. B. B. C. C. D. D. E. E. 39. All of the following statements are true EXCEPT: A. Aspirin (pka=3.5) is 90% in its lipid-soluble, protonated form at pH=2.5. B. Absorption of a weakly basic drug is likely to occur faster from the intestine than from the stomach. C. The basic drug promethazine (pKa=9.1) is more ionized at pH =7.4 than at pH=2. D. Acidification of the urine accelerates the secretion of a weak base, pKa=8. E. Uncharged molecules more readily cross cell membranes than charged molecules. 40. In pregnancy the following statements are correct EXCEPT:A. Gross anatomical defects in the fetus are unlikely to result from drugs in late pregnancy. B. Sex hormones, when taken during pregnancy, may harm the fetus. C. A vasoconstrictor drug may cause fetal distress. D. Cytotoxic or anticancer drugs given to the mother are safe during pregnancy. E. Teratogenic drugs may produce harmful effect, especially if given in early pregnancy. |Page٨ General Pharmacology MCQs 41. All of the following drugs are hepatic microsomal enzyme inducers EXCEPT:A. Phenobarbitone. B. Phenylbutazone. C. Phenytoin. D. Rifampin. E. Cimetidine. 42. The following reactions are related to pharmacogenetic abnormalities EXCEPT:A. Succinylcholine apnea. B. Slow and fast acetylation of isoniazed and sulfonamide. C. Glucose -6- phosphate dehydrogenase deficiency induced hemolytic anemia after exposure to primaquine. D. Increased resistance to the anticoagulant action of warfarin. E. Bradycardia due to β- adrenoreceptor antagonists. 43. Drug X and Y have the same mechanism of antihypertensive action. Drug X in a dose of 10 mg produces the same response as 100 mg of drug Y. This suggests that: A. Drug Y is less efficacious than drug X. B. Toxicity of drug X is less than that of drug Y. C. Drug X is about 10 times more potent than drug Y. D. Drug X is safer than drug Y. E. Drug X will have a shorter duration of action than drug Y because less of drug X is present for a given time. 44. Which of the following are methods for avoiding "first-pass "metabolism of the drug by the liver ? A. Subcutaneous injection of epinephrine. B. Sublingual administration of nitroglycerin. C. Intramuscular administration of propranolol. D. Transdermal application of nitroglycerin. E. All of the above. 45. A 55-year-old woman with heart failure is to be treated with a diuretic drug. Drugs X and Y have the same mechanism of diuretic actions. Drug X in a dose of 5 mg produces the same magnitude of dieresis as 500 mg of drug Y. this suggests that : A. drug Y is less efficacious than drug X B. drug X is about 100 times more potent than drug Y C. toxicity of drug X is less than that of drug Y D. drug X is a safer drug than drug Y E. drug X will have shorter duration of action than drug Y because less of drug X is present for a given effect 46. Concerning drug-plasma protein binding: A. Volume of distribution is not influenced by protein binding B. Drug clearance is not influenced by the extent of protein binding C. Drug-plasma albumin binding is usually highly selective D. Renal failure may decrease drug bound fraction because of reduced plasma albumin E. Drugs are seldom bound to plasma proteins |Page٩ General Pharmacology MCQs 47. Termination of pharmacological action of thiopental occurs mainly by: A. Metabolism B. Rabid excretion C. Redistribution D. Strong binding to plasma protein E. Inactivation in the brain tissues 48. Characteristics of drug conjugates (following conjugation reactions) A. Are more polar compounds B. Are less readily excreted C. Are typically more pharmacologically active D. Usually occurs in the kidneys E. Usually involve hydrolysis , oxidation and reduction 49. Cytochrome P450 induction (increased, amount of P450 enzyme protein) is often associated with: A. Increased enzyme synthesis rates and metabolism for certain drugs B. Redacted enzyme synthesis rates and metabolism for certain drugs C. Enhanced protein binding for certain drugs D. Enhanced bioavailability for certain drugs E. Prolonged half-life for certain drugs 50. Features that influence drug bioavailability include all of the following except : A. First pass hepatic metabolism B. Lipid solubility of the drug C. Chemical stability of the drug D. Nature of drug formulation E. plasma protein binding of the drug 51. The following statements concerning distribution of drugs are true . Except: A. the rate of delivery of drugs to tissues such as muscles , is usually slow. B. blood brain barrier prevents many polar drugs from entering into the brain. C. Protein bound drugs can't distribute into tissues. D. Drugs strongly bound to plasma proteins usually show low volume of distribution. E. Volume of distribution is used to calculate the dosing interval. 52. The therapeutic index of a drug is a measure of its : A. Potency B. Efficacy C. Safety D. Dose variability E. Affinity 53. Which one of the following statements is applicable to absorption of drugs from the gastrointestinal tract? A. Absorption of weak acids occurs only from the stomach and not from the small intestine. B. Some drugs are metabolized extensively by the liver and do not reach the general circulation(first-pass effect) C. All the drugs are stable at the low pH of the stomach. D. IM rout of administration do not require sterile techniques. E. Ingesting drugs with food always enhances drug absorption. | P a g e ١٠ General Pharmacology MCQs 54. The addition of glucoronic acid to a drug : A. Decrease its water solubility B. Usually leads to inactivate the drug C. Is an example of phase I reaction D. Occur at the same rate in adults & newborns E. Involves cytochrome P450 55. All of the following conditions tend to increase the patient response to drugs except : A. Congestive heart failure B. Hepatic cirrhosis C. Hyperthyroidism D. Hypothyroidism E. Hyperalbuminemia 56. Type A adverse reaction is : A. Not related to the normal pharmacological effect B. Related to the normal pharmacological effect C. Related to the normal pharmacological effect with exaggerated response D. An immunological reaction of the drug E. A genetically determined drug-related reaction 57. Two drugs may act on the same tissue or organ through independent receptors, resulting in effects in opposite directions. This is known as : A. Physiologic antagonism B. Competitive antagonism C. Irreversible antagonism D. Chemical antagonism E. Dispositional antagonism 58. The pharmacokinetic value that most reliably reflects the amount of drug reaching the target tissue after oral administration is the : A. Peak blood concentration B. Time to peak blood concentration C. Product of the Vd and the first-order rate constant D. Vd E. Area under the blood concentration-time curve (AUC) 59. Which one of the following is phase II biotransformation reaction : A. Sulfoxide formation. B. Nitro reduction. C. Ester hydrolysis. D. Sulfate conjugation. E. Deamination. 60. Pharmacokinetic drug interactions can result from all of the following except : A. Impaired absorption B. Induction of the drug microsomal enzyme metabolizing system C. Inhibition of the drug microsomal enzyme metabolizing system D. Inhibition of renal excretion E. The combination of a bacteriostatic and bacteriosidal antibiotic | P a g e ١١ General Pharmacology MCQs 61. Most weak acid drugs as well as weak base drugs are absorbed primary from the small intestine after oral administration because : A. Both types are more ionized in the small intestine B. Both types are less ionized in the small intestine C. The blood flow is greater in the small intestine than that of other parts of the gut D. The surface area of the intestine is greater than other parts of the gut E. The small intestine has non-specific carriers for most drugs 62. Which of the following statements is correct : A. If 10 mg drug A produces the same response as 100 mg of drug B, Drug A is more efficacious than drug B B. The greater the efficacy, the greater the potency of a drug C. In selecting a drug , potency is usually more important than efficacy D. A competitive antagonist increases the ED50 E. Variation in response to a drug among different individuals is most likely to occur with a drug showing a large therapeutic index 63. A patient is administered to the ER for treatment of drug overdose. The identity of the drug is unknown, but it is observed that when the urine pH is acidic, the renal clearance of the drug is less than the glomerular filtration rate, and when the urin pH is alkaline, the clearance is greater than the glomerular filtration rate. The drug probably a : A. Strong acid B. Strong base C. Non-electrolyte D. Weak base E. Weak acid 64. After an intravenous bolus injection of lidocaine, the major factors determining the initial plasma concentration are : A. Dose & apparent volume of distribution B. Dose & clearance C. Apparent volume of distribution & clearance D. Clearance & half-time E. Half-time & dose 65. Which of the following statement is most correct ? A. Maximum efficacy of a drug is directly correlated with its potency B. The therapeutic index is the LD50 (or TD50) divided by ED50 C. A partial agonist has no effect on its receptors unless another drug is present D. Graded dose-response data provide information about the standard deviation of sensitivity to the drug in the population studied E. Quantal dose-response curves provide information about the efficacy of a drug 66. Receptors that communicate their activation by turning on an integral intracellular tyrosine kinase are typically : A. Acetylcholine nicotinic receptors B. G protein-coupled C. Insulin or epidermal growth factor receptors D. Steroid receptors E. Vitamin D receptors | P a g e ١٢ General Pharmacology MCQs 67. If the plasma concentration of a drug declines with first-order kinetics, this means that : A. There is only one metabolic path for drug distribution B. The half-life is the same regardless of the plasma concentration C. The drug is largely metabolized in the liver after oral administration and has low bioavailability D. The rate of elimination is proportionate to the rate of administration at all times E. The drug is not distributed outside the vascular system 68. A physical process by which a weak acid becomes less water-soluble and more lipid-soluble at low pH is : A. distribution B. elimination C. first pass effect D. permeation E. protonation 69. Hepatic drug metabolism is often decreased by all of the following diseases states except : A. Diseases affecting liver architecture or function B. Heavy metal poisoning C. Hyperthyroidism D. Cardiac diseases E. Malignant hepatic tumor 70. Regarding adverse drug reactions, which of the following statements is incorrect? A. Are unlikely to follow abrupt discontinuation of drugs B. May be dose-related C. Of the idiosyncratic type account for most fatalities D. May follow long-term use of neuroleptics E. May affect the next biological generation 71. All of the following would increase the bioavailability of a drug administered by the oral rout except : A. Increased time of gastric emptying B. Increased lipid solubility of drug C. Increased hepatic metabolism of a drug D. Increased rate of drug dissolution E. Increased proportion of drug remaining uncharged 72. All of the following would decrease the therapeutic index of a drug except : A. Renal failure B. Hepatic impairment C. Increase in clearance D. Increase in neurotoxicity E. Increase in allergic reaction to drug | P a g e ١٣ General Pharmacology MCQs 73. Concerning potency and efficacy : A. Potency refers to the maximal effect a drug is capable of producing B. Efficacy refers to lack of toxicity of a drug C. Efficacy refers to the amount of a drug required to produce one-half of the maximal effect D. Their efficacy is more important than their potency when comparing the usefulness of morphine and codeine as analgesics E. Their potency is more important than their efficacy when comparing the usefulness of morphine and codeine as analgesics 74. According to alphabetical classification of types of adverse drug effects into A, B, C, D and E. type B is a bizarre effects that are unpredictable and are uncommon. All of the following effects are considered as type B reactions EXEPT: A. Anaphylaxis due to penicillin injection. B. Bradycardia due to ß-adrenoreceptor blockers. C. Acute hepatic necrosis due to use of halogenated anesthetic. D. Bone marrow damage due to chloramphenicol. E. Acute interstitial nephritis due to one of the non-steroidal anti-inflamatory drugs. 75. A new anticoagulant is developed. The drug exist in only one form which is highly lipid soluble and is excreted unchanged in the urine. Its volume of distribution is equal to plasma volume. The drug is not metabolized by enzymes in the GI tract. What would be the bioavailability of this compound? A. 1.0 B. 0.6 C. 0.3 D. 0.1 E. 0 76. You are concerned about the drug interactions caused by changes in drug metabolism in your patient. Drug metabolism usually results in a product that is: A. More likely to distribute intracellularly. B. less lipid-soluble than the original drug. C. More likely to be reabsorbed by kidney tubules. D. less water-soluble than the original drug. E. More likely to produce adverse effects. 77. If therapy with multiple drugs causes induction of drug metabolism in your asthma patient, it will: A. Result in increased smooth endoplasmic reticulum. B. Result in decreased rough endoplasmic reticulum. C. Result in decreased enzymes in the soluble cytoplasmic function. D. Require 3-4 months to reach completion. E. Be irreversible. 78. Which of the following is NOT a phase I drug-metabolizing reaction? A. Acelylation. B. Deamination. C. Hydrolysis. D. Oxidation. E. Reduction. | P a g e ١٤ General Pharmacology MCQs 79. All the following statements about unwanted effects of drugs (adverse reactions) are correct EXCEPT: A. There is a fundamental biological distinction between therapeutic and adverse effects of drugs. B. Some adverse effects are due to normal predictable pharmacological effects of drugs and may occur in any patient taking the drug. C. Some adverse effects are due to abnormalities in the patient and will only occur in some patients taking the drug. D. The terms intolerant and tolerant refer to individuals at either extreme of the normal distribution curve. E. some adverse effects may affect the next biological generation. 80. All the following statements about drugs and Pregnancy are correct EXCEPT: A. In early pregnancy, drugs may damage the embryo or fetus directly. B. In late pregnancy, gross anatomical defects are unlikely to result from drugs. C. Non-steroidal anti-inflammatory drugs can delay the onset of labor. D. cytotoxic or anti-cancer drugs are unsafe during early pregnancy. E. A vasoconstrictor drug such as ergot alkaloids given to mother during labor will not affect the fetus. 81. All the following statements regarding signal transduction are true EXCEPT: A. It allows cells to communicate with each other. B. The signal is initiated by extracellular ligands. C. Activation of G proteins occur. D. Activation of protein kinases occur. E. Hormones and neurotransmitters are the final products of transduction. 82. Clinically important adverse drug interactions are likely to occur with the following EXCEPT: A. Drugs that have shallow dose-response curve and high therapeutic index. B. drugs that exhibit saturable metabolism (zero order kinetics). C. In severely ill patients who are receiving several drugs at the same time. D. In patients with significantly impaired liver or kidney functions. E. In the elderly since have multiple pathology. 83. Conditions responsible for excessive or unusual drug effects include: A. Unusual sensitivity, either allergic in nature or an idiosyncratic. B. Administration of the drug too frequently or for a prolonged period of time. C. the presence of other drugs. D. the age of the individual. E. All the above. 84. All the following statements about partial agonists are true EXCEPT: A. they can reduce the effect of full agonists acting at the same receptor sites. B. They are unable to occupy 100% of the receptors. C. They are unable to elicit responses as large as those elicited by full agonists, even at high concentrations. D. Their effects can be blocked by noncompetitive antagonists. E. Their effects can be blocked by competitive antagonists. | P a g e ١٥ General Pharmacology MCQs 85. Which of the following mechanisms is common to the synaptic transmitters: acetylcholine, Gamma-aminobutyric acid, glycin, aspartate and glutamate? A. They regulate the flow of ions through plasma membrane channels. B. They activate tyrosine kinases through transmembrane receptors. C. They activate Gs-guanine nucleotide binding proteins. D. They bind to receptors that regulate gene expression in the nucleus. E. They activate soluble guanylyl cyclase. 86. All the following statements concerning drug distribution into and out of the central nervous system (CNS) are true EXCEPT: A. The blood-brain barrier, which involves drug movement through glial cell membranes as well as capillary membranes, is the main hindrance to drug distribution to the CNS. B. Most drugs enter the CNS by simple diffusion at rates proportional to the lipid solubility of the non-ionized form of the drug. C. Receptor-mediated transport allows certain peptides to gain access to the brain. D. Strongly ionized drugs freely enter the CNS through carrier-mediated transport systems. E. Some drugs leave the CNS by passing from the cerebrospinal into the dural blood sinuses through the arachnoid villi. 87. Properties of drug absorption include all the following EXCEPT: A. The route of administration is an important factor affecting drug absorption. B. The rate of absorption varies after oral administration. C. After rectal administration, drug follows first-order kinetics. D. After intramuscular administration, drug absorption follows first-order kinetics. E. With intravenous administration, drug absorption follows first-order kinetics. 88. The greater proportion of the dose of a drug administred orally will be absorbed in the small intestine. However, on the assumption that passive transport of the nonionized form of a drug determines its rate of absorption, which of the following compounds will be absorbed to the least extent in the stomach? A. Ampicillin (pKa=2.5) B. Aspirin (pKa=3.0) C. Warfarin (pKa=5.0) D. Phenobarbital (pKa=7.4) E. Propranolol (pKa=9.4) 89. All of the following statements are true EXCEPT: A. Biotransformation of drugs in the body usually yields products that diffuse across renal tubular membranes less readily than the parent compounds B. Biotransformation reactions often yield products that are inactive pharmacologically C. Biotransformation reactions can yield products that are pharmacologically more active than the parent compound D. Biotransformation reactions can yield products that are more lipophilic than the parent compound E. In some cases, biotransformation reactions enhance the toxicity of chemicals introduced into the body | P a g e ١٦ General Pharmacology MCQs 90. Which of the following are characteristic of phase 2 biotransformation reactions? A. They oxidize primary amines B. They hydroxylate aliphatic compounds C. They conjugate compounds with endogens substances such as glucuronic acid or sulfate D. They hydrolyze esters E. They reduce carbonyl oxygen to form hydroxyl groups 91. All of the following statements about efficacy and potency are true EXCEPT: A. Efficacy is usually a more important clinical consideration than potency B. Efficacy is indicated by the height of the log dose-response curve C. The ED50 is a measure of the drug's efficacy D. Drugs that produce a similar pharmacologic effect can have very different levels of efficacy E. On log dose-response curve, two drugs with the same action but with different potencies usually have parallel curves 92. All of the following statements are correct EXCEPT: A. Weak acids are absorbed efficiently across the epithelial cells of the stomach B. Coadministration of atropine delays the absorption of a second drug C. A drug showing a large Vd may indicate that the drug is highly bound in peripheral tissues D. First pass hepatic metabolism of a drug may greatly reduce its bioavailability E. Generally drugs are more effectively absorbed from the stomach than through the small intestine 93. Which of the following results in a doubling of the steady state concentration of a drug? A. Doubling the rate of infusion B. Maintaining the infusion rate but doubling the loading dose C. Doubling the rate of infusion and doubling the concentration of the infused drug D. Tripling the rate of infusion E. Quadrupling the rate of infusion 94. All of the following are examples of parenteral drug delivery EXCEPT: A. Rectal B. Transdermal C. Intravenous D. Subcutaneous E. Intramuscular 95. All of the following are true concerning drug distribution EXCEPT: A. Fenestrations in brain capillaries constitute a blood brain barrier B. A hydrophobic drug given intravenously would be distributed more rapidly to the brain than to adipose tissue C. A drug that is a weak base will become trapped in the stomach D. A hydrophilic IV drug would be distributed rapidly to the kidneys E. Closed capillaries limit drug distribution more than open capillaries | P a g e ١٧ General Pharmacology MCQs 96. All of the following clinical situation in a patient would increase the half life of a drug except: A. Heart failure B. Renal failure C. Hepatitis D. Hemorrhage E. Decrease in volume of distribution 97. All of the following would increase the rate of elimination of a drug from the body EXCEPT: A. Vasoconstriction of afferent arteriole in renal glomerulus B. Increase in glomerular filtration rate C. Increase in renal plasma flow D. Increase in proximal tubule secretion rate E. Increase in liver microsomal enzymes 98. Which one of the following statements is INCORRECT? A. Conjugation (phase 2) reactions involving drugs or their metabolites are not mediated by the cytochrome P-450 system in the liver B. Metabolism of a drug usually decreases its lipid solubility C. The extent to which a drug is bound to plasma proteins is not directly predictive of its rate of renal excretion D. For drugs with first order elimination kinetics, constant amount of drug is lost per unit time E. For drugs with zero order elimination kinetics, the relationship between drug dosage and maximally attained plasma concentration is non linear 99. All of the following may shorten the duration of a drug's effects EXCEPT: A. Extensive plasma protein binding of the drug B. Compensatory reflexes C. Redistribution of the drug into skeletal muscle or adipose tissue D. Renal excretion of the drug E. Metabolism of the drug 100. All of the following statements regarding drugs in early pregnancy are correct EXCEPT: A. Drugs may damage the embryo or fetus indirectly by altering the mother's physiology B. Ergot alkaloids can cause abortion C. Abortion may go unrecognized D. Cytotoxics are safe E. Teratogens are likely to have their most devastating effects 101. Two drugs with the same pharmacological effect were given together the next effect produced was greater than the sum of their individual effects. This phenomenon is termed: A. Potentiation B. Synergism C. Addition D. Cross tolerance E. Tachyphylaxis | P a g e ١٨ General Pharmacology MCQs 102. All of the following statements about drug allergy are incorrect EXCEPT: A. All drugs are antigens B. If antibodies to a drug are present in patients, then they will suffer an adverse reaction if they receive the drug again C. Drugs or drug metabolites combine with a body protein to form an antigen D. Allergic reactions reproduce, only with greater intensity, the normal pharmacological actions of the causative drug E. Drugs elicit only type 1 (immediate or anaphylactic) allergic reactions 103. All of the following are affected by G proteins EXCEPT: A. Inositol-1,4,5,-triphosphate B. Cyclic AMP C. Acetylcholine D. Diacylglycerol E. Cyclic GMP 104. A partial agonist A. Has a lower affinity than a full agonist B. Has a higher efficacy than a full agonist C. Has a lower efficacy than a full agonist D. Has a higher affinity than a full agonist 105. The therapeutic index is: A. A measure of the relative effectiveness of a drug B. A reference book in which one can look up all the drugs which are indicated for a particular therapeutic use C. A measure of the relative safety of a drug D. Routinely available from published studies with human subjects E. Calculated by using data obtained from a graded dose-response curve 106. These proteins serve as transducers between membrane receptors and intracellular second messenger systems A. Vitamin C B. C protein C. G protein D. muscarinic receptors E. Ligand gated ion channels 107. Drug handling in the neonate may be markedly different than in young adult because the neonate has A. Immature active transport systems for organic anions and cations B. A lower glomerular filtration rate C. Immature liver microsomal systems D. A reduced ability to glucuronidate phase 1 biotransformation products E. All of the above | P a g e ١٩ General Pharmacology MCQs 108. The major factor in the altered sensitivity of older patients (>65 years of age) to many drugs is A. Increased drug biotransformation B. Decreased plasma esterases C. Decreased absorption after oral administration D. Decreased renal function E. Increased plasma protein binding 109. A competitive antagonist A. Combines with the same site on the receptor as does the agonist B. Increases metabolism of agonist drugs C. Binds to a different receptor molecule than the agonist D. Is irreversible 110. Compared to a graded dose-response curve, a quantal dose-response curve A. Provides more information about the half life of a drug B. Provides more information about the variation in individual response to a drug C. Is less useful when comparing therapeutic and adverse drug responses D. Requires the same number of test subjects to construct E. Is just another way to express exactly the same information 111. Which determined from a graded dose-response curve, median effective dose (ED50) refers to the dose at which A. 50% of all receptors are occupied B. 50% of all individuals first show response C. 50% of all individuals show a 50% maximum response D. 50% of all individuals show a maximum response E. 50% of the maximum response is observed 112. The following question is based on the following paragraph: Which one of the following statements is true concerning the dose-response curves: A. Curves A, B, C represents responses to weak agonists with C being the least potent B. Curve A represents the responses to a full agonist and curves B and C represents the responses to the agonist in the presence of two concentrations of a competitive antagonist C. Curves A, B, C represents 3 drugs which are acting at different recpetors because their potencies are different D. Curve D could be the response to agonist A in the presence of a competitive inhibitor E. Curve D represents an agonist with a high intrinsic efficacy because the dose needed for a given effect is larger than that of agonist A, B or C | P a g e ٢٠ General Pharmacology MCQs 113. Which of the following terms best describes a drug that blocks the action of epinephrine at its receptors by occupying those receptors without activating them? A. Pharmacologic antagonist B. Partial agonist C. Physiological antagonist D. Chemical antagonist E. Non-competitive antagonist 114. The results shown in the graph below were obtained in a comparison of positive inotropic agents. Which of the following statements is MOST correct ? A. B. C. D. E. Drug A is most effective Drug B is least potent Drug C is most potent Drug B is more potent than drug C and more effective than drug A Drug A is more potent than drug B and more effective than drug C 115. Features that influence drug bioavailability may include all of the following Except : A. First-pass hepatic metabolism. B. Lipid soulibility of the drug. C. Chemical stability of the drug. D. Nature of drug formulation. E. Plasma protein binding of the drug | P a g e ٢١ General Pharmacology MCQs Problem Solving Questions (22 MCQs) : 1. The antimicrobial drug, tetracycline, is found to be therapeutically effective when 250mg of drug are present in the body. The T1/2 of tetracycline is 8 hours. What is the correct rate of infusion? A. 7 mg/hour. B. 12 mg/hour. C. 22 mg/hour. D. 37 mg/hour. E. 45 mg/hour. 2. A drug with a half life 8 hours is administered by continuous intravenous infusion. How long will it take for the drug to reach 90% of its final steady-state level? A. 12 hours. B. 18 hours. C. 25 hours. D. 30 hours. E. 40 hours. 3. A drug has an elimination rate constant (Ke) of 0.1 hr-1. It is administered in a dose of 250 mg every 8 hours. Practically the steady state level will be attained after: A. First dose . B. Two doses. C. Four doses. D. Five days. E. Seven days. A patient with heart disease require immediate treatment with the antiarrythmic drug procainamide. The text book lists the following pharmacokinetic value for procainamide in a 70-kg person : Vd = 80L, Cl = 25 L/hour, and therapeutic concentration = 5mg/L : Answer the coming 3 questions in relation to the case 4. What intravenous loading dose should be administered ? A. 180 mg B. 225 mg C. 400 mg D. 520 mg E. 800 5. What constant intravenous infusion rate should be used to maintain the therapeutic concentration of 5mg/L ? A. 90 mg/hour B. 125 mg/hour C. 180 mg/hour D. 250 mg/hour E. 650 mg/hour | P a g e ٢٢ General Pharmacology MCQs 6. What is the predicted half-life of procainamide in this patient ? A. 2.22 hrs B. 2.4 hrs C. 3.6 hrs D. 5.0 hrs E. 10.0 hrs 7. A drug with a half life 12 hours is administered by continuous intravenous infusion. How long will it take for the drug to reach 90% of its final steady-state level? A. 18 hours. B. 24 hours. C. 30 hours. D. 40 hours. E. 90 hours. 8. A drug with a half-life 10 hours is administered by continuous intravenous infusion. How long will it take for the drug to reach 75% of its final steady-state level? A. 10 hours. B. 20 hours. C. 25 hours. D. 33 hours. E. 48 hours. A 35-kg child with heart disease requires immediate treatment with the antiarrhythmic drug procainamide. The textbook lists the following pharmacokinetic values for procainamide in a 70-kg person: Vd= 160 L, Cl= 50 L/hour, oral availability 83% and therapeutic concentration 5 mg/L. Answer the coming 3 questions in relation to this case: 9. What intravenous loading dose should be administered? A. 180 mg. B. 225 mg. C. 400 mg. D. 520 mg. E. 600 mg. 10. What constant intravenous infusion rate should be used to maintain the therapeutic concentration of 5 mg/L? A. 90 mg/hour. B. 125 mg/hour. C. 180 mg/hour. D. 217 mg/hour. E. 650 mg/hour. | P a g e ٢٣ General Pharmacology MCQs 11. What is the predicted half-life of procainamide in this child? A. 2.22 hrs. B. 2.4 hrs. C. 3.6 hrs. D. 5.0 hrs. E. 10.0 hrs 12. A 19-year-old woman is brought to the hospital with sever asthmatic wheezing. You decide to use IV theophyline for treatment. The pharmacokinetics of the theophyline include the following average parameters: Vd 35 L, Cl 48 ml/min, halflife 8 hours. If an IV infusion of theophyline is started at a rate of 0.48 mg/min, how long will it take to reach 93.75 of the final steady state? A. Approximately 48 minutes B. Approximately 5.8 hours. C. Approximately 6 hours. D. Approximately 8 hours. E. Approximately 32 hours. A patient is admitted to General Hospital with pneumonia due to gram-negative bacteria. The antibiotic tobramysin is ordered. The CL and Vd of tobramysin in the patient are 80 mL/min and 50 L, respectively. Answer the coming 2 questions 13. What maintenance dose should be administered intravenously every 6 hours to eventually obtain average steady state plasma concentration of 6 mg/L? A. 0.24 mg. B. 0.48 mg. C. 0.60 mg. D. 10.0 mg. E. 50 mg. 14. If you wish to give the patient an IV loading dose to achieve the therapeutic plasma concentration of 6 mg/L rapidly, how much should be given? A. 10 mg. B. 100 mg. C. 150 mg. D. 200 mg. E. 300 mg. 15. A normal volunteer will receive a new drug in a phase 1 clinical trial. The clearance and volume of distribution of the drug in this subject are 1.386 L/h and 80 L, respectively. The half-life of the drug in this subject will be approximately: A. 90 hr. B. 80 hr. C. 40 hr. D. 20 hr. E. 2 hr. | P a g e ٢٤ General Pharmacology MCQs 16. Gentamicin is often given in intermittent IV bolus doses of 100 mg three times a day to achieve target peak plasma concentration of about 5 mg/L. Gentamicin's clearance (normally 5.4 L/h/70kg) is almost entirely by glomerular filtration. Your patient, however, is found to have a creatinine clearance one-third of normal. Your initial dosage regimen for this patient would probably be: A. 33 mg three times daily. B. 66 mg three times daily. C. 72 mg three times daily. D. 100 mg twice daily. E. 150 mg twice daily. 17. A narcotic addict is brought to the emergency room in a deep coma. His friends state that he took a large dose of morphine 6 hours earlier. An immediate blood analysis show a morphine blood level of 0.25 mg/L. Assuming that the pharmacokinetics of morphine in this patient are Vd 200 L and half life 3 hours, how much morphine did the patient inject 6 hours earlier? A. 25 mg. B. 50 mg. C. 100 mg. D. 200 mg. E. Too few data to predict. 18. The total body clearance of a drug is 50 ml/min. the optimal IV infusion rate to maintain a plasma level of 10 µg/ml is: A. 0.1 mg/min B. 0.2 mg/min C. 0.5 mg/min D. 0.75 mg/min E. 1 mg/min 19. A drug has a volume of distribution of 0.27 L/Kg, what is the loading dose (mg/Kg) to attain a peak plasma level of approximately 10 µg/ml? A. 0.05 mg/Kg B. 0.1 mg/Kg C. 1.0 mg/Kg D. 2.5 mg/Kg E. 4 mg/Kg 20. What would be the half life of a drug with a volume of distribution of 0.15 L/Kg and a clearance of 48 ml/min in a 70 Kg man? A. 1.5 hr B. 2.5 hr C. 4.5 hr D. 8.5 hr E. 24 hr | P a g e ٢٥ General Pharmacology MCQs 21. What orally administered loading dose would achieve a plasma concentration of 10 µg/ml for a drug that has a volume of distribution (Vd) of 100 L and 75% bioavailability? A. 1.3 mg B. 3.6 mg C. 12 mg D. 24 mg E. 48 mg 22. A drug dose repeated at the elimination half-life, just prior to the third administration, approaches the steady state of further administrations by what percentage? A. 50%. B. 62.5%. C. 75%. D. 82.5%. E. 90%. | P a g e ٢٦ General Pharmacology MCQs Lippincott's Questions (11 MCQs) : Pharmacokinetics : 1.1 Which one of the following statements is correct? A. Weak bases are absorbed efficiently across the epithelial cells of the stomach. B. Coadministration of atropine speeds the absorption of a second drug. C. Drugs showing a large Vd can be efficiently removed by dialysis of the plasma. D. Stressful emotions can lead to a slowing of drug absorption. E. If the Vd for a drug is small, most of the drug is in the extraplasmic space. 1.2 Which one of the following is true for a drug whose elimination from plasma shows first-order kinetics? A. The half-life of the drug is proportional to the drug concentration in plasma. B. The amount eliminated per unit of time is constant. C. The rate of elimination is proportional to the plasma concentration. D. Elimination involves a rate-limiting enzymic reaction operating at its maximal velocity (Vm). E. A plot of drug concentration versus time is a straight line. 1.3 A patient is treated with drug A, which has a high affinity for albumin and is administered in amounts that do not exceed the binding capacity of albumin. A second drug, B, is added to the treatment regimen. Drug B also has a high affinity for albumin but is administered in amounts that are 100 times the binding capacity of albumin. Which of the following occurs after administration of drug B? A. An increase in the tissue concentrations of drug A. B. A decrease in the tissue concentrations of drug A. C. A decrease in the volume of distribution of drug A. D. A decrease in the half-life of drug A. E. Addition of more drug A significantly alters the serum concentration of unbound drug B. 1.4 The addition of glucuronic acid to a drug: A. Decreases its water solubility. B. Usually leads to inactivation of the drug. C. Is an example of a Phase I reaction. D. Occurs at the same

rate in adults and newborns. E. Involves cytochrome P450. 1.5 Drugs showing zero-order kinetics of elimination: A. Are more common than those showing first-order kinetics. B. Decrease in concentration exponentially with time. C. Have a half-life independent of dose. D. Show a plot of drug concentration versus time that is linear. E. Show a constant fraction of the drug eliminated per unit of time. | P a g e ۲۷ General Pharmacology MCQs 1.6 A drug, given as a 100-mg single dose, results in a peak plasma concentration of 20 µg/mL. The apparent volume of distribution is (assume a rapid distribution and negligible elimination prior to measuring the peak plasma level): A. 0.5 L. B. 1 L. C. 2 L. D. 5 L. E. 10 L. 1.7 A drug with a half-life of 12 hours is administered by continuous IV infusion. How long will it take for the drug to reach ninety percent of its final steady-state level? A. 18 hours. B. 24 hours. C. 30 hours. D. 40 hours. E. 90 hours. 1.8 Which of the following results in a doubling of the steady-state concentration of a drug? A. Doubling the rate of infusion. B. Maintaining the rate of infusion but doubling the loading dose. C. Doubling the rate of infusion and doubling the concentration of the infused drug. D. Tripling the rate of infusion. E. Quadrupling the rate of infusion. Pharmacodynamics 2.1 Which of the following statements is correct? A. If 10 mg of Drug A produces the same response as 100 mg of Drug B, Drug A is more efficacious than Drug B. B. The greater the efficacy, the greater the potency of a drug. C. In selecting a drug, potency is usually more important than efficacy. D. A competitive antagonist increases the ED50. E. Variation in response to a drug among different individuals is most likely to occur with a drug showing a large therapeutic index. 2.2 Variation in the sensitivity of a population of individuals to increasing doses of a drug is best determined by which of the following? A. Efficacy. B. Potency. C. Therapeutic index. D. Graded dose-response curve. E. Quantal dose-response curve. 2.3 Which of the following statements most accurately describes a system having spare receptors? A. The number of spare receptors determines the maximum effect. B. Spare receptors are sequestered in the cytosol. C. A single drug-receptor interaction results in many cellular response elements being activated. D. Spare receptors are active even in the absence of agonist. E. Agonist affinity for spare receptors is less than their affinity for nonspare receptors. | P a g e ۲۸ General Pharmacology MCQs Katzung's Questions (60 MCQ) : 1. A 3-year-old child is brought to the emergency department having just ingested a large over-dose of promethazine, an antihistaminic drug. Promethazine is a weak base with a pK a of 9.1 .It is capable of entering most tissues, including the brain. On physical examination, the heart rate is 100/rain, blood pressure 110/60 mm Hg, and respiratory rate 20/min. In this case of promethazine overdose: A. Urinary excretion would be accelerated by administration of NH4C1 B. Urinary excretion would be accelerated by giving NaHCO 3 C. More of the drug would be ionized at blood pH than at stomach pH D. Absorption of the drug would be faster from the stomach than from the small intestine E. Hemodialysis is the only effective therapy 2. All of the following are general mechanisms of drug permeation EXCEPT A. Aqueous diffusion B. Aqueous hydrolysis C. Lipid diffusion D. Pinocytosis or endocytosis E. Special carrier transport 3. Which one of the following processes is best suited for permeation of very large protein molecules into cells ? A. Aqueous diffusion B. Aqueous hydrolysis C. Lipid diffusion D. Endocytosis E. Special carrier transport 4. A patient with a history of episodic attacks of coughing, wheezing, and shortness of breath is being evaluated in the asthma clinic. Several drug treatments with different routes of administration are under consideration. Which of the following statements about routes of administration is MOST correct? A. Blood levels often rise more slowly after intramuscular injection than after oral dosing B. The "first-pass" effect is the result of metabolism of a drug after administration and before it enters the systemic circulation C. Administration of antiasthmatic drugs by inhaled aerosol is usually associated with more adverse effects than is administration of these drugs by mouth D. Bioavailability of most drugs is greater with rectal (suppository) administration than with sublingual administration. E. Administration of a drug by transdermal patch is often faster but is associated with more first-pass metabolism than oral administration 5. Aspirin is a weak organic acid with a pKa of 3.5. What percentage of a given dose will be in the lipid-soluble form in the duodenum at a pH of 4.5? A. About 1% B. About 10% C. About 50% D. About 90% E. About 99% | P a g e ۲۹ General Pharmacology MCQs 6. If the plasma concentration of a drag declines with "first-order kinetics," this means that A. There is only one metabolic path for drug disposition B. The half-life is the same regardless of the plasma concentration C. The drug is largely metabolized in the liver after oral administration and has low bioavailability D. The rate of elimination is proportionate to the rate of administration at all times E. The drug is not distributed outside the vascular system 7. Regarding termination of drug action ، A. Drugs must be excreted from the body to terminate their action B. Metabolism of drugs always increases their water solubility C. Metabolism of drugs always abolishes their pharmacologic activity D. Hepatic metabolism and renal excretion are the two most important mechanisms involved E. Distribution of a drug out of the bloodstream terminates the drug's effects 8. Distribution of drugs to specific tissues A. Is independent of blood flow to the organ B. Is independent of the solubility of the drug in that tissue C. Depends on the unbound drug concentration gradient between blood and the tissue D. Is increased for drugs that are strongly bound to plasma proteins E. Has no effect on the half-life of the drug 9. Timolol is being considered for the treatment of glaucoma in a 58-year-old patient. Except for elevated intraocular pressure, the patient's history and physical exam are unremarkable. Timlol is a weak base of pKa 9.2 .Which of the following statements is FALSE ? A. After parenteral administration, the concentration of timolol in the aqueous humor (pH 7.8) will be lower than the concentration in the duodenum (pH 5.5) B. When administered as eye drops, the rate of absorption into the eye will be slower if the drops are alkaline (pH 8.0) than if they are acidic (pH 5.0) C. Excretion in the urine will be slower if urine pH is alkaline (.pH 8.0) than if the urine pH is acidic (pH 5.8) D. The proportion of timolol in the protonated form will be approximately 10% at pH 8.2 E. The proportion of timolol in the more lipid soluble form will be approximately 10% at pH 10.2 10. For which of the following drugs will excretion be most significantly accelerated by acidification of the urine ? A. Weak acid with pK of 5.5 B. Weak base with pK of 3.5 C. Weak acid with pK of 7.5 D. Weak base with pK of 6.5 | P a g e ۳۰ General Pharmacology MCQs 11. A physical process by which a weak acid becomes less water-soluble and more lipid-soluble at low pH is : A. Distribution B. Elimination C. First-pass effect D. Permeation E. Protonation 12. The set of properties that characterize the effect of a drug on the body is called : A. distribution B. permeation C. pharmacodynamics D. pharmacokinetics E. protonation 13. The set of properties that characterize the effect of the body on a drug is called : A. absorption B. distribution C. elimination D. first order kinetics E. pharmacokinetics 14. The most general term for the process by which the amount of active drug in the body is reduced after absorption into the systemic circulation : A. distribution B. elimination C. excretion D. first-order elimination E. metabolism 15. The process by which the amount of drug in the body is reduced after administration but before entering the systemic circulation : A. excretion B. first-order elimination C. first-pass effect D. metabolism E. pharmacokinetics 16. The kinetics that is characteristic of the elimination of ethanol and high doses of phenytoin and aspirin are called : A. distribution B. excretion C. first-pass effect D. first-order elimination E. zero-order elimination | P a g e ۳۱ General Pharmacology MCQs 17. A 55-year-old woman with heart failure is to be treated with a diuretic drug. Drugs X and Y have the same mechanism of diuretic action. Drug X in a dose of 5 mg produces the same magnitude of diuresis as 500 mg of drug Y. This suggests that A. Drug Y is less efficacious than drug X B. Drug X is about 100 times more potent than drug Y C. Toxicity of drug X is less than that of drug Y D. Drug X is a safer drug than drug Y E. Drug X will have a shorter duration of action than drug Y because less of drug X is present for a given effect 18. Dose-response curves are used for drug evaluation in the animal laboratory and in the clinic. Quantal dose-response curves are A. Used for determining the therapeutic index of a drug B. Used for determining the maximal efficacy of a drug C. more precisely quantitated than ordinary graded dose-response curves D. Obtainable from the study of intact subjects but not from isolated tissue preparations E. Used to determine the statistical variation (standard deviation) of the maximal response to the drug 19. The results shown in the graph below were obtained in a comparison of positive inotropic agents. Which of the following statements is MOST correct ? A. B. C. D. E. Drug A is most effective Drug B is least potent Drug C is most potent Drug B is more potent than drug C and more effective than drug A Drug A is more potent than drug B and more effective than drug C 20. In the absence of other drugs, pindolol causes an increase in heart rate by activating beta adrenoceptors. In the presence of highly effective beta stimulants, however, pindolol causes a dose-dependent, reversible decrease in hearl rate. Therefore. pindolol should be classified as A. An irreversible antagonist B. A physiologic antagonist C. A chemical antagonist D. A partial agonist E. A spare receptor agonist | P a g e ۳۲ General Pharmacology MCQs 21. Which of the following statements about spare receptors is MOST correct ? A. Spare receptors, in the absence of drug, are sequestered in the cytoplasm B. Spare receptors will be detected if the intracellular effect of drug-receptor interaction lasts longer than the drug-receptor interaction itself C. Spare receptors influence the maximal efficacy of the drug-receptor system D. Spare receptors activate the effector machinery of the cell without the need for a drug E. Spare receptors may be detected by the finding that the EC50 is greater than the Kd for the agonist 22. Two drugs, "A'" and "B,'" were studied in a large group of patients and the percentages of the group showing a specific therapeutic effect were determined. The results are shown in the table: Which of the following statements about these results is MOST correct ? A. Drug A is safer than drug B B. Drug B is more effective than drug A C. The two drugs act on the same receptors D. Drug A is less potent than drug B E. The therapeutic index of drug B is 10 23. Which of the following terms best describes the antagonism of leukotriene's bronchoconstrictor effect (mediated at leukotriene receptors) by terbutaline (acting at adrenoceptors) in a patient with asthma? A. Pharmacologic antagonist B. Partial agonist C. Physiologic antagonist D. Chemical antagonist E. Noncompetitive antagonist 24. Which of the following terms best describes an antagonist that interacts directly with the agonist and not at all, or only incidentally, with the receptor? A. Pharmacologic antagonist B. Partial agonist C. Physiologic antagonist D. Chemical antagonist E. Noncompetitive antagonist | P a g e ۳۳ General Pharmacology MCQs 25. Which of the following terms best describes a drug that blocks the action of epinephrine at its receptors by occupying those receptors without activating them? A. Pharmacologic antagonist B. Partial agonist C. Physiologic antagonist D. Chemical antagonist E. Noncompetitive antagonist 26. Which of the following provides information about the variation in sensitivity to the drug within the population studied ? A. Maximal efficacy B. Therapeutic index C. Drug potency D. Graded dose-response curve E. Quantal dose-response curve 27. Which of the following most accurately describes the transmembrane signaling process involved in steroid hormone action ? A. Action on a membrane-spanning tyrosine kinase B. Activation of a G protein, which activates or inhibits adenylyl cyclase C. Diffusion into the cytoplasm and binding to an intracellular receptor D. Diffusion of "STAT" molecules across the membrane E. Opening of transmembrane ion channels 28. Which of the following provides information about the largest response a drug can produce, regardless of dose ? A. Drug potency B. Maximal efficacy C. Mechanism of receptor action D. Therapeutic index E. Therapeutic window 29. Verapamil and phenytoin are both eliminated from the body by metabolism in the liver. Verapamil has a clearance of 1.5 L/min, approximately equal to liver blood flow, whereas phenytoin has a clearance of 0.1 L/min. When these compounds are administered along with rifampin, a drug that increases hepatic drug-metabolizing enzymes, which of the following is most likely? A. The clearance of both verapamil and phenytoin will be increased B. The clearance of both verapamil and phenytoin will be decreased C. The clearance of verapamil will be unchanged, whereas the clearance of phenytoin will be increased D. The clearance of phenytoin will be unchanged, whereas the clearance of verapamil will be increased E. The clearance of both drugs will be unchanged | P a g e ۳۴ General Pharmacology MCQs Each of the curves in the graph below may be considered a concentration effcct curve or a concentration-binding curve. For each numbered item, select the ONE lettered option that is most closely associated with it. 30. Describes the percentage binding of a full agonist to its receptors as the concentration of a partial agonist is increased from low to very high levels A. curve 1 B. curve 2 C. curve 3 D. curve 4 E. curve 5 31. Describes the percentage effect when a full agonist is present throughout the experiment, and the concentration of a partial agonist is increased from low to very high levels A. curve 1 B. curve 2 C. curve 3 D. curve 4 E. curve 5 32. Describes the percentage binding of the partial agonist whose effect is shown by curve 4. if the system has many spare receptors A. curve 1 B. curve 2 C. curve 3 D. curve 4 E. curve 5 33. A city clinic is considering the substitution of generic drugs in order to save money. The clinical pharmacologist is asked to advise on the bioavailability of the generic products. She informs the head of the clinic that the bioavailability of drugs is : A. Established by FDA regulation al 100% for preparations for intramuscular injection B. 100% for oral preparations that are not metabolized in the liver C. Calculated from the peak concentration of drug divided by the dose administered D. Important because bioavailability determines what fraction of the administered dose reaches the systemic circulation E. Equal to 1 (100%) only for drugs administered by any parenteral route | P a g e ۳۵ General Pharmacology MCQs 34. You have diagnosed asthma in a 19-year-old patient with recurrent, episodic attacks of bronchospasm with wheezing. You are concerned about drug interactions caused by changes in drug metabolism in this patient. Drug metabolism usually results in a product that is A. More likely to distribute intracellulary B. Less lipid-soluble than the original drug C. More likely to be reabsorbed by kidney tubules D. More lipid-soluble than the original drug E. More likely to produce adverse effects 35. If therapy with multiple drugs causes induction of drug metabolism in your asthma patient, it will A. Result in increased smooth endoplasmic reticulum B. Result in increased rough endoplasmic reticulum C. Result in decreased enzymes in the soluble cytoplasmic fraction D. Require 3-4 months to reach completion E. Be irreversible 36. A factor that is likely to increase the duration of action of a drug that is partially metabolized by CYP3A4 in the liver is A. Chronic administration of phenobarbital prior to and during therapy with the drug in question B. Chronic therapy with cimetidine prior to and during therapy with the drug in question C. Displacement from tissue binding sites by another drug D. Increased cardiac output E. Chronic administration of rifampin 37. Which of the following is a phase II drug-metabolizing reaction? A. Acetylation B. Deamination C. Hydrolysis D. Oxidation E. Reduction 38. Reports of cardiac arrhythmias caused by unusually high blood levels of two antihistamines terfenadine and astemizole, led to their removal from the market. These effects were best explained by A. Concomitant treatment with phenobarbital B. Use of these drugs by smokers C. A genetic predisposition to metabolize succinylcholine slowly D. Treatment of these patients with ketoconazole, an antifungal agent 39. Which of the following drugs is associated with slower metabolism in Caucasians and African -Americans than in most Asians? A. Cimetidine B. Procainamide C. Quinidine D. Rifampin E. Succinylcholine | P a g e ۳۶ General Pharmacology MCQs 40. Which of the following drugs may inhibit the hepatic microsomal P450 responsible for warfarin metabolism? A. Cimetidine B. Ethanol C. Phenobarbital D. Procainamide E. Rifampin 41. Which of the following drugs is hydrolyzed by a plasma esterase that is abnormally low in activity in about one out of every 2500 humans? A. Cimetidine B. Ethanol C. Procainamide D. Rifampin E. Succinylcholine 42. Chronic use of which of the following drugs may increase the toxicity of acetaminophen? A. Cimetidine B. Ethanol C. Ketoconazole D. Procainanmide E. Quinidine F. Ritonavir G. Succinylcholine H. Verapmil 43. Which of the following drugs has higher first-pass metabolism in men than in women ? A. Cimetidine B. Ethanol C. Ketoconazole D. Procainanmide E. Quinidine F. Ritonavir G. Succinylcholine H. Verapmil 44. Which of the following drugs is an established inhibitor of P-glycoprotein (P-gp) drug transporters ? A. Cimetidine B. Ethanol C. Ketoconazole D. Procainanmide E. Quinidine F. Ritonavir G. Succinylcholine H. Verapmil | P a g e ۳۷ General Pharmacology MCQs 45. Which of the following agents, when used in combination with other anti-HIV drugs permits dose reduction ? A. Cimetidine B. Ethanol C. Ketoconazole D. Procainanmide E. Quinidine F. Ritonavir G. Succinylcholine H. Verapmil Problem Solving Questions (Katzung) : Mr. Jones is admitted to General Hospital with pneumonia due to gram-negative bacteria. The antibiotic tobramycin is ordered. The CL and Vd of tobramycin in Mr. Jones are 80 mL/min and 40 L, respectively. 46. What maintenance dose should be administered intravenously every 6 hours to eventually obtain average steady-state plasma concentrations of 4 mg/L? A. 0.32 mg B. 19.2 mg C. 115 mg D. 160 mg E. 230 mg 47. If you wish to give Mr. Jones an IV loading dose to achieve the therapeutic plasma concentration of 4 mg/L rapidly, how much should be given? A. 0.1 mg B. 10 mg C. 115.2 mg D. 160 mg E. None of the above 48. Despite your careful adherence to basic pharmacokinetic principles, your padent on digoxin therapy has developed digitalis toxicity. The plasma digoxin level is 4 mg/mL. Renal function is normal, and the plasma t1/2 for digoxin in this patient is 1.6 days. How long should you withhold digoxin in order to reach a safer yet probably therapeutic level of 1 mg/mL? A. 1.6 days B. 2.4 days C. 3.2 days D. 4.8 days E. 6.4 days | P a g e ۳۸ General Pharmacology MCQs 49. A 60-year-old man enters the hospital with a myocardial infarction and a severe ventricular arrhythmia. The antiarrhythmic drug chosen has a narrow therapeutic window: the minimum toxic plasma concentration is 1.5 times the minimum therapeutic plasma concentration. The half-life is 6 hours. It is essential to maintain the plasma concentration above the minimum therapeutic level to prevent a possibly lethal arrhythmia. Of the following, the most appropriate dosing regimen would be A. Once a day B. Twice a day C. Three times a day D. Four times a day E. Constant IV infnsion 50. A 50-year-old woman with metastatic breast cancer has elected to participate in the trial of a new chemotherapeutic agent. It is given by constant 1V infnsion of 8 mg/hour. Plasma concentrations (Cp) are measured with the results shown in the table. Time After Plasma Start of Concentration Infusion (mg/L) (hours) 1 0.8 2 1.3 4 2.0 8 3.0 10 3.6 16 3.7 20 3.84 25 3.95 30 4.0 40 4.0 From these data it may be concluded that A. Volume of distribution is 30 L B. Clearance is 2 L/h C. Elimination follows zero-order kinetics D. Half-life is 8 hours E. Doubling the rate of infnsion would result in a plasma concentration of 16 mg/L at 40 hours 51. A nineteen-year-old woman is brought to the hospital with severe asthmatic wheezing. You decide to use IV theophylline for treatment. The pharmacokinetics of theophylline include the following average parameters: Vd 35 L; CL 48 mL/min; half-life 8 hours. If an IV infnsion of theophylline is started at a rate of 0.48 mg/min, how long will it take to reach 93.75% of the final steady state concentration? A. Approximately 48 minutes B. Approximately 7.4 hours C. Approximately 8 hours D. Approximately 24 hours E. Approximately 32 hours | P a g e ۳۹ General Pharmacology MCQs 52. Your 74-year-old patient with a myocardial infarction has a severe cardiac arrhythmia. You have decided to give lidocaine to correct the arrhythmia .A continuous IV infnsion of lidocaine, 1.92 mg/min, is started at 8 am. The average pharmacokinetic parameters of lidocaine are: Vd 77 L: CL 640 mL/min: half-life 1.4 hours. The expected steady-state plasma concentration is approximately A. 40 mg/L B. 3.0 mg/L C. 0.025 mg/L D. 7.2 mg/L E. 3.46 mg/L 53. Your patient has been receiving lidocaine for 8 hours and you decide to obtain a plasma concentration measurement. When the results come back, the plasma level is exactly twice of what you expected. The infusion rate should : A. be changed to 0.48 mg/min B. be changed to 0.96 mg/min C. be halted for 1.4 h and then restarted at 0.96 mg/min D. be halted for 1.4 h and then restarted at 1.92 mg/min E. not be changed but the plasma level should be measured again 54. A patient requires an infusion of procainamide, lts half-life is 2 hours. The infusion is begun at 9 AM. At 1 PM the same day a blood sample is taken; the drug concentration is found to be 3 mg/L. What is the probable steady-state drug concentration, eg, after 12 hours of infnsion? A. 3 mg/L B. 4 mg/L C. 6 mg/L D. 9.9 mg/L E. 15 mg/L 55. A young man is brought to the emergency room in a deep coma. His friends state that he took a large dose of morphine 6 hours earlier. An immediate blood analysis shows a morphine blood level of 0.25 mg/L. Assuming that the pharmacokinetics of morphine in this patient are Vd 200 L and half-life is 3 hours, how much morphine did the patient inject 6 hours earlier ؟A. 25 mg B. 50 mg C. 100 mg D. 200 mg E. not enough data to predict 56. A normal volunteer will receive a new drug in a phase 1 clinical trial. The clearance and volume of distribution of the drug in this subject are 1.386 L/h and 80 L, respectively. The half-life of the drug in this subject will be approximately: A. 83 hours B. 77 hours C. 58 hours D. 40 hours E. 0.02 hours | P a g e ٤٠ General Pharmacology MCQs 57. Gentamicin is often given in intermittent IV bolus doses of 100 mg three times a day to achieve target peak plasma concentration of about 5 mg/L. Gentamicin's clearance (normally 5.4 L/h/70kg) is almost entirely by glomerular filtration. Your patient, however, is found to have a creatinine clearance one-third of normal. Your initial dosage regimen for this patient would probably be: A. 20 mg three times a day B. 33 mg three times a day C. 72 mg three times a day D. 100 mg twice a day E. 150 mg twice a day A new drug was studied in 20 healthy volunteers to determine basic pharmacokinetic parameters. A dose of 100 mg was administered as an intravenous bolus to each volunteer and blood samples were analyzed at intervals as shown in the graph below. The average plasma concentrations at each time are shown by the solid circles at 10 and 30 minutes and at 1, 2, 3, 4, 6, and 8 hours after administration. 58. The elimination half-life of the new drug is approximately A. 1.5 hours B. 2 hours C. 4 hours D. 6 hours E. 8 hours 59. The volume of distribution of the new drug is approximately A. 0.05 L B. 0.1L C. 5 L D. 10 L E. 20 L 60. The clearance of the new drug is approximately A. 0.43 L/h B. 0.86 L/h C. 1.15L/h D. 2.3 L/h E. Too few data to answer | P a g e ٤١