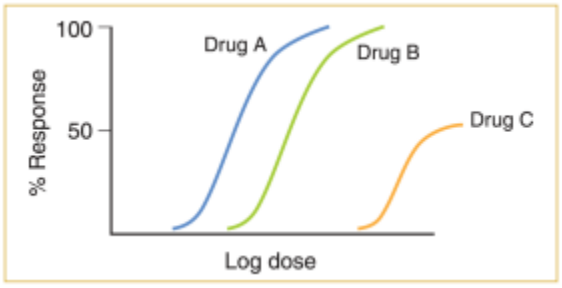
Pharmacology

TEST BANK

MADE BY :
OLA NWAFLEH
HAMZA JA'AREH

Intro & Pharmacodynamics

1) The data presented in the figure below show that:



A. Drugs A and B have equal efficacy
B. Drug B and C have equal efficacy
C. Drug B is a partial agonist
D. Drugs A and C have the same affinity and efficacy
E. Drugs A and B have equal potency

ans : a

2)**Concerning competitive antagonism, which of the following sentence is correct?**

a. Competitive antagonism is produced by antagonists that have the ability to activate receptors

b. With competitive antagonism, maximal drug effect cannot be obtained, even at high agonist concentrations

c. Competitive antagonism is based on reversible drug/antagonist binding at receptor sites

d. With competitive antagonism, the dose-effects curve is shifted to the left.

e. All of the above.

ans : d

3) **Which of the following is NOT an example of drug misuse**

a. Not following the instructions when taking a prescription medication

b. Taking a friend's prescription medication to treat headache

c. Taking an over-the-counter medication more often than is recommended

d. Regular use of increasing amounts of cocaine to get high

e. None of the above

ans: d

4**) The development of tolerance to a drug is accompanied by an increase in which of the following parameters of that drug?**

a. Maximal efficacy

b. Therapeutic index

c. Effective dose

d. Potency

e. All of the above

ans: b

5) **Which of the following statements is correct?**

a. Always you should write the drug chemical name in your prescription

b. For a drug with high plasma protein binding capacity, lower plasma protein level

in children means that the free drug will be less

c. Metabolism is always more or in adults than children

d. Stopping a drug can be a cause of an adverse effect.

e. The risk benefit: ration for any drug is constant for the human life stages.

Ans: d

6**) If the effect of combination of two drugs is equal to the sum of their individual effects, the two drugs are exhibiting?.**

a. Antagonism

b. Potentiation

c. Synergism

d. Additive

ans : c

7) Which term describes the use of a drug for a purpose which it was not intended?

a. Misuse

b. habitual

c. Addiction

d. Tolerance

e. Abuse

ans : e

8) High plasma protein binding

a. Increases the volume of distribution of the drug

b. Facilitates glomerular filtration of the drug

c. Generally makes the drug long acting

d. Minimizes drug interactions

e. Makes the drugs more potent

ans: c

9) **Which of the following statements is correct?**

a. Receptor in our bodies are in a dynamic state

b. In a patient, a response to a low dose to a drug is likely followed by an

indefinitely increasing response as the dose is increased

c. Always you should write the drug trade name in your prescription

d. Regardless the tissue site of the receptor, activation of a receptor in the body

always produces the same effect.

e. None of the above

ans : a

10) **The therapeutic index of a drug is a measure of its**

a. Dose variability

b. Additive

c. Safety

d. Potency

e. Efficacy

ans : c

11) **Which of the following statements is correct?**

a. hypersensitivity reactions is classified as augmented (dose dependent) drug

reaction.

b. Variation in response to a drug among different individuals is most likely to

occur with a drug showing narrow therapeutic index.

c. If the TD50 is much higher than the ED50 then the drug is described as a narrow

therapeutic drug

d. Potency is indicated by the height of the log dose response

e. It is safe to consume as much as you want from the OTC drugs.

Ans: b

12) **Amer was poisoned with a drug that antagonize receptor A irreversibly, which of the following is an appropriate pharmacological intervention?**

a. To give drug that increase the metabolism of Drug A

b. To give receptor A non-competitive antagonist

c. To give receptor A non-competitive agonist

d. To give another drug that is an agonist to a different receptor, such receptor has the same physiological function as receptor A

e. To give another drug that is an agonist to a different receptor, such receptor has opposite physiological function to receptor A

ans :d

13) Isoproterenol produces maximal contraction of cardiac muscle in a manner similar to epinephrineWhich of the following best describes isoproterenol?

A. Full agonist.

B. Partial agonist.

C. Competitive antagonist.

D. Irreversible antagonist.

E. Inverse agonist.

Ans : a

14) 2 If 10 mg of naproxen produces the same analgesic response as 100 mg of ibuprofen, which of the following statements is correct?

A. Naproxen is more efficacious than is ibuprofen.

B. Naproxen is more potent than ibuprofen.

C. Naproxen is a full agonist, and ibuprofen is a partial

agonist.

D. Naproxen is a competitive antagonist.

E. Naproxen is a better drug to take for pain relief than

is ibuprofen.

Ans : b

15**) If 10 mg of morphine produces a greater analgesic response than can be achieved by ibuprofen at any dose, which of the following statements is correct?**

A. Morphine is less efficacious than is ibuprofen.

B. Morphine is less potent than is ibuprofen.

C. Morphine is a full agonist, and ibuprofen is a partial

agonist.

D. Ibuprofen is a competitive antagonist.

E. Morphine is a better drug to take for pain relief than

is ibuprofen

ans : e

Based on the information presented here, since morphine is more efficacious than is ibuprofen, it is going to provide more pain relief. As long as the situation warrants the necessity of such efficacious pain relief and without any information about differences in side effects caused by the two drugs, morphine is the better choice. Choice C would only be true if both drugs bound to the same receptor population, and that is not the case. The other choices are incorrect statements

16**) In the presence of naloxone, a higher concentration of morphine is required to elicit full pain relief. Naloxone by itself has no effect. Which of the following is correct regarding these medications?**

A. Naloxone is a competitive antagonist.

B. Morphine is a full agonist, and naloxone is a partial

agonist.

C. Morphine is less efficacious than is naloxone.

D. Morphine is less potent than is naloxone.

E. Naloxone is a noncompetitive antagonist

Ans : a

17**) In the presence of pentazocine, a higher concentration of morphine is required to elicit full pain relief. Pentazocine by itself has a smaller analgesic effect than does morphine, even at the highest dose. Which of the following is correct regarding these medications?**

A. Pentazocine is a competitive antagonist.

B. Morphine is a full agonist, and pentazocine is a

partial agonist.

C. Morphine is less efficacious than is pentazocine.

D. Morphine is less potent than is pentazocine.

E. Pentazocine is a noncompetitive antagonist.

Ans : b

18**) In the presence of picrotoxin, diazepam is less efficacious at causing sedation, regardless of the dose. Picrotoxin by itself has no sedative effect even at the highest dose. Which of the following is correct?**

A. Picrotoxin is a competitive antagonist.

B. Diazepam is a full agonist, and picrotoxin is a partial

agonist.

C. Diazepam is less efficacious than is picrotoxin.

D. Diazepam is less potent than is picrotoxin.

E. Picrotoxin is a noncompetitive antagonist

Ans : e

19) **Which of the following would up-regulate postsynaptic β1 adrenergic receptors?**

A. Daily use of amphetamine that causes norepinephrine to be released.

B. A disease that causes an increase in the activity of norepinephrine neurons.

C. Daily use of isoproterenol, a β1 receptor agonist.

D. Daily use of formoterol, a β2 receptor agonist.

E. Daily use of propranolol, a β1 receptor antagonist.

Ans : e

20) Which of the following parameters is used to indicate the ability of a drug to produce the desired therapeutic effect relative to a toxic effect?

(A) Potency

(B) Intrinsic activity

(C) TI

(D) Efficacy

(E) Bioavailability

Ans : c

21) **Concerning drug receptor interactions, the constant Kd refers to:**

A) maximal physiological effect
B) maximal binding
C) the drug concentration required to occupy 50% of receptors
D) drug concentration that results in half-maximal physiological response
E) all of the above

Ans : d

22) **EC50 mainly reflexs a drug's:**

A) maximal effect
B) potency
C) lethality
D) ease of elimination
E) safety

Ans : b

23) **Drug effects are thought to be proportional to the number of occupied receptors**

- (●) **A) true**
- ( ) **B) false**

24) True statement(s) concerning competitive inhibition:

- [ ] **A) competitive in addition is based on reversible drug/antagonist binding at receptor sites**
- [x] **B) with competitive inhibition, the dose-effects curve the shifted to the left**
- [ ] **C) with competitive inhibition, maximal drug effect cannot be obtained, even at high agonist**

concentrations

- [ ] D) all the above

25) An example of a receptor which is a structural protein.

- ( ) A) Na/K ATPase
- ( ) B) acetylcholinesterase
- (•) C) tubulin
- ( ) D) DNA
- ( ) E) phospholipase C

26) An example of an agent that exerts much of its effects through intracellular receptors that in complex form binds to DNA response elements:

- ( ) A) acetylcholine
- ( ) B) dopamine
- (•) C) corticosteroids
- ( ) D) diltiazem
- ( ) E) atropine

27) Factors that may cause variation in drug responsiveness:

- ( ) A) changes in the number or function of receptors
- ( ) B) tachyphylaxis
- ( ) C) idiosyncratic drug responses
- ( ) D) hypersensitivity reactions
- (•) E) all of the above

28) Major roles of receptors:

- [ ] A) determine rate of drug elimination
- [ ] B) determine drug action selectivity
- [ ] C) provide a means of blocking drug action as well as mediating drug action
- [ ] D) act as drug storage sites

E) b+c

Ans: e

Pharmacokinetics

Q1)Match the following :

a. **Absorption** **1. Irreversible transfer of drugs from internal to external environment**

b. **Distribution** **2. Irreversible transport from site of administration to the blood cir.**

c. **Biotransformation** **3. The drug leaving the blood to peripheral tissue**

d. **Excretion** **4. The process of preventing renal reabsorption by drug's alteration**

Answer:1D, 2A, 3B, 4C

Q2) What does "pharmacokinetics" include?

a) **Complications of drug therapy**

b) **Drug biotransformation in the organism**

c) **Influence of drugs on metabolism processes**

d) **Influence of drugs on genes**

Answer: B

Q3) All of the following about passive absorption is true EXCEPT:

a- **The driving force is concentration gradient**

b- **Does not involve a carrier**

c- **The process is saturable**

d- **The process shows a low structural specificity**

e- **The process is suitable for lipid soluble drugs**

Answer: C

Q4) 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

Answer: B

Q5)A hydrophilic medicinal agent has the following property:

a) **Low ability to penetrate through the cell membrane lipids**

b) **Penetrate through membranes by means of endocytosis**

c) **Easy permeation through the blood-brain barrier**

d) **High reabsorption in renal tubules**

Answer: A

Q6) Biological barriers include all except:

a) Renal tubules

b) Cell membranes

c) Capillary walls

d) Placenta

Answer: A

Q7) The following factor(s) influencing drug absorption:

a) Blood flow to the absorption site

b) Total surface area available for absorption

c) Contact time at the absorption surface

d) All of the above

e) **None of the above**

Answer: D

Q8) First pass effect is:

a) **The amount of the drug destroyed by stomach acidity after oral administration of drugs for the first time.**

b) **The amount of the drug passed with stool after oral administration.**

c) **Amount of drug lost due to hepatic metabolism during drug absorption for the first time after oral administration**

d) **Amount of drug that is eliminated by the liver by hepatic artery.**

e) **The amount of drug that bypass the Cirrhosed liver after oral administration through portosystemic anastomosis.**

Answer: C

Q9) What does the term "bioavailability" mean?

a) **Plasma protein binding degree of substance**

b) **Permeability through the brain-blood barrier**

c) **Fraction of an uncharged drug reaching the systemic circulation following any route administration**

d) **Amount of a substance in urine relative to the initial doze**

Answer: C

Q10) Factor(s) that influence bioavailability of drugs:

a) **First-pass hepatic metabolism**

b) **Solubility of the drug**

c) **Chemical instability in GIT**

d) Nature of the drug formulation re

e) All of the above

Answer: E

Q11)What is the proportion of nonionized form of week base (pka = 9.4)when put in a media (pH = 7.4)

a) 99%

b) 1%

c) 0.1%

d) 50%

e) Answer: A

Q12) Which of the following acids has the highest degree of ionization in an aqueous solution?

a) Aspirin pKa = 3.5

b) Indomethacin pKa = 4.5

c) Warfarin pKa = 5.1

d) Ibuprofen pKa = 5.2

e) Phenobarbital pKa = 7.4

Answer: A

Q13) The excretion of a weakly acidic drug generally is more rapid in alkaline urine than in acidic urine. This process occurs because

a) A weak acid in alkaline media will exist primarily in its ionized form, which cannot be reabsorbed easily

b) A weak acid in alkaline media will exist in its lipophilic form, which cannot be reabsorbed easily.

c) All drugs are excreted more rapidly in an alkaline urine.

Answer: A

Q14) Passive diffusion doesn't depend on,

a) **Permeability**
b) **Thickness**
c) **Concentration difference**
d) **Number of transporters**

Answer: D

Q15) The following factor(s) determine drug distribution:

a) **Blood flow**
b) **Capillary permeability**
c) **Drug structure**
d) **All of the above**

Answer: D

Q16) The volume of distribution (Vd) relates:

a) **Single to a daily dose of an administrated drug**
b) **An administrated dose to a body weight**
c) **An uncharged drug reaching the systemic circulation**
d) **The amount of a drug in the body to the concentration of a drug in plasma**

Answer: D

Q17)Most of the drugs are distributed homogeneously

a) **True**

b) **False**

Answer: B

Q18) The volume of distribution for a drug that is completely retained in the vascular compartment would be.

a) **High**

b) **Low**

c) **Unchanged**

d) **Cannot be determined**

Answer: B

Q19) A patient is treated with a Drug A, which has a high affinity for Albumin and is administered in amount that don't exceed the binding capacity of Albumin. A second drug B also has a high affinity for albumin but is administered in amounts that are 100 time the binding capacity of albumin. What happens after administration of Drug B?

a) **High tissue Conc. for Drug A**

b) **Low tissue Conc. For Drug A**

c) **Low vd of Drug A**

d) **Low half life of Drug A**

e) **Addition of more Drug A significantly alters the serum conc. of unbound Drug B**

Answer: A

Q20)All of the following factors may increase the volume of distribution EXCEPT:

a) **Extremely lipid soluble drugs**

b) **Blood tissue barriers**

c) **Drug-drug interactions**

d) **None of the above**

Answer: B

Q21)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**

Answer: E

Q22)All of the following about free drugs (unbound drags) in plasma are correct EXCEPT:

a) **Only free drugs can distribute to peripheral tissues**

b) **Only free drugs can pass through glomerular filtration**

c) **Only free drugs become available for hepatic metabolism**

d) **Highly bound drugs (98% bound) have clinically significant drug-drug interactions with other drugs through displacement from binding sites on plasma protein**

e) **Basic drugs bind with acidic binding sites on plasma globulins while acidic drugs bind with basic binding sites on plasma albumin**

Answer: D

Q23)A patient with an edema would have an increased volume of distribution if

a) **The patient was taking a hydrophobic drug**
b) **The patient was taking a hydrophilic drug**
c) **An edema always causes an increase in Vd**
d) **An edema always causes an decrease in Vd**

Answer: B

Q24)What would be the expected distribution of Digoxin in the case of odema?

a. **Higher than expected**
b. **Lower Vd than expected**
c. **None of above**

Answer: C

Q25)What is the reason of complicated penetration of some drugs through brain-blood barrier?

a) **Incredibly high lipid solubility of a drug**
b) **Meningitis**
c) **Absence of pores in the brain capillary endothelium**
d) **High endocytosis degree in a brain capillary**

Answer: A

Q26)All of the following conditions tend to increase the patients response to drugs EXCEPT:

a. **Congestive cardiac failure.**

b. **Hepatic cirrhosis.**

c. **Hyperthyroidism.**

d. **Hypothyroidism**

e. **Hyperalbuminemia**

Answer: E

Q27)The P-glycoprotein is a multidrug transmembrane transporter protein that transports medications across cell membranes. Functions of this protein include

a) **Pumping drugs into the urine for excretion**

b) **Transport of drugs into liver hepatocytes**

c) **Transport of drugs into fetal circulation for fetal treatment**

d) **Transport of drugs from the intestinal lumen to the circulation**

e) **Transport of drugs from the bloodstream into brain cells**

Answer: A

Q28)Researcher is studying the bioavailability of commonly used antimuscarinics to treat irritable bowel syndrome. Medication A is administered in a 100 mg daily dose orally and 60 mg of the drug is absorbed from the gastrointestinal tract unchanged. Thus, the bioavailability of Medication A is

a) **40%**

b) **60%**

c) **70%**

d) **80%**

e) **90%**

Answer: B

Q29) A 27-year-old female with vulvovaginal candidiasis is given a one-time 100 mg dose of oral fluconazole. She has no other pertinent medical problems and

takes no prescription medications. Administration of the medication results in a peak plasma concentration of 20 mg/L. What is the apparent volume of drug distribution?

a) **0.5 L**

b) **1 L**

c) **3 L**

d) **5 L**

e) **50 L**

Answer: D

Q30) Pick out the right statement:

a. **High molecular weight drugs get excreted in Urine**

b. **Lipid-soluble drugs with low molecular weight get excreted in biles**

c. **Antibiotics may undergoes active secretion**

Answer: C

Q31) Elimination is expressed as follows:

a) **Rate of renal tubular reabsorption**

b) **Clearance speed of some volume of blood from substance**

c) **Time required to decrease the amount of drug in plasma by one-half**

d) **Clearance of an organism from a xenobiotic**

Answer: D

Q32) The most rapid eliminated drugs are those with glomerular filtration rate and active secretion but aren't passively reabsorbed:

a. **True**

b. **False**

Answer: A

Q33) Elimination rate constant (Kelim} is defined by the following parameter:

a. **Rate of absorption**

b. **Maximal concentration of a substance in plasma**

c. **Highest single dose**

d. **Half life (t1/2)**

Answer: D

Q34) Half life (t1/2) is the time required to:

a. **Change the amount of a drug in plasma by half during elimination**

b. **Metabolize a half of an introduced drug into the active**

c. **Absorb a half of an introduced drug**

d. **Bind a half of an introduced drug to plasma proteins**

Answer: A

Q35) Half life (t1/2) doesn't depend on:

a. **Biotransformation**

b. **Time of drug absorption**

c. **Concentration of a drug in plasma**

d. **Rate of drug elimination**

Answer: B

Q36) 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**

Answer: B

Q37)If a drug is eliminated by first order kinetics

a) **A constant amount of the drug will be eliminated per unit time**
b) **Its clearance value will remain constant**
c) **Its elimination half-life will increase with dose**
d) **It will be completely eliminated from the body in 2 x half-life period**

Answer: B

Q38)Disappearance of most drugs from the plasma follows first order kinetics, which means that:

a. **The rate of disappearance is independent of the amount of drug left at any time**
b. **The rate of disappearance is proportional to the amount of drug left at any time**
c. **The disposition mechanisms are saturated**
d. **The drug is rapidly metabolized**
e. **The rate of disappearance is proportional to clearance rate**

Answer: B

Q39)Drugs showing zero-order kinetics of elimination

a) **Are more common than showing first-order kinetics**
b) **Shows exponential decrease with time**
c) **Have a t1/2 independent of dose**
d) **Show a plot of drug concentration versus time that is linear**
e) **Shows a constant fraction of the drug eliminated per unit time**

Answer: D

Q40)If a drug is not metabolized, is bound 50% to plasma protein, and has a renal clearance of 400 mL/min in man, the mode of excretion must be:

a) Glomerular filtration

b) Filtration and reabsorption

c) Tubular secretion

d) Filtration and secretion

e) Excretion by extrarenal route

Answer: D

Q41)The loading dose (DL) of a drug is usually based on the

a) Total body clearance of the drug

b) Percentage of drug bound to plasma proteins

c) Fraction of drug excreted unchanged in the urine

d) Apparent volume of distribution and desired drug concentration in plasma

e) Area under the plasma drug concentration versus time curve (AUC)

Answer: D

Q42)Which of the following results in a doubling of steady-state conc. of the 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

Answer: A

Q43)A student studying pharmacology is a member of a team that is conducting research related to the elimination of multiple anticoagulant medications. His duty as a member of the team is to collect serum M samples of the subjects every 4 hours and send them for analysis of serum drug levels. He is also supposed to collect, document and analyze the data. For one of the subjects, he notices that

the subject is eliminating 0.5 mg of the drug every 4 hours. Which of the following anticoagulants did this patient most likely consume?

a) **Aspirin**

b) **Enoxaparin**

c) **Dabigatran**

d) **Fondaparinux**

e) **Apixaban**

Answer: A

Q44)A drug with a half life of 8 hours is administered by continuous intravenous infusion. How long will it take to reach 90% of its final steady-state level?

a- **12 hours**

b- **18 hours**

c- **25 hours**

d- **30 hours**

e- **40 hours**

Answer: C

Q45)A patient receives a single dose of antibiotics following a prostate needle biopsy. He takes 500 mg of ciprofloxacin immediately after completion of the procedure. The half-life of the medication is 8 h. At approximately how many half-lives will it take for 90% of the drug to be excreted from the body?

a) **1.0**

b) **2.0**

c) **3.0**

d) **3.3**

e) **5**

Answer: C

Q46)Pharmacokinetic characteristics of propranolol include Vd = 300 L/70 kg, CL = 700 mL/min, and oral bioavailability f = 0.25. What is the dose needed to achieve a plasma level equivalent to a steady-state level of 20 ?g/L?

a) **4 mg**
b) **8 mg**
c) **12 mg**
d) **24 mg**
e) **48 mg**

Answer: D

Q47) A doctor write in a prescription (Take 1 Capsule (3mg) every 6 hours) and you know the t1/2 of the drug = 3 hours, then, what's the maximal amount of the drug that would accumulate in Plasma?:

a- **4mg**
b- **3mg**
c- **7mg**
d- **6mg**

Answer: A

Q48)Normally, acetaminophen has a Vd = 70L and C1 = 350 mL/min. If acetaminophen was administered to a patient with 50% renal function, what parameter would differ from normal?

a) **Loading dose would be higher**
b) **Maintenance dose would be lower**
c) **t ½ would be higher**
d) **Vd would be 35L**

e) **Cl would be 700 mL/min**

Answer: C

Q49) A drug with elimination rate of 5mg/h had a 5mg/L serum level. If the urine concentration of the drug is 30mg/L and urine flow rate is 10mg/L what is the renal clearance?

a. **10L/h**

b. **20 L/h**

c. **40 L/h**

d. **60 L/h**

Answer: D

Q50)A solution Verapamil is administered to the portal vein of the isolated perfused liver of a rat at a concentration of 8.9 mg/L. After 5 minutes, the concentration that is measured at the hepatic vein is 2.99 mg/L and the hepatic blood flow is 1050 mL/min. What is the hepatic extraction rate (ERH) of verapamil in this model/Hepatic clearance respectively

a. **0.5286/687.2 mL/min**

b. **0.7563/656.5 mL/min**

c. **1.3345/732.7 mL/min**

d. **0.2123/504.4 mL/min**

Answer: A

Q51)A 28-year-old man with seborrheic dermatitis is prescribed a topical corticosteroid crème by his dermatologist in hopes of alleviating the chronic rash and erythema on the cheeks. Which of the following steps is most critical to achieve a therapeutic drug concentration in plasma?

a) **Absorption**

b) **Distribution**

c) **Elimination**

d) Glycosylation

e) Metabolism

Answer: A

Q52)The route of drug administration is determined by

a- Water solubility of the drug

b- Lipid solubility of the drug

c- Ionization of the drug

d- Desirability of rapid onset of action of the drug

e- All of the above

Answer: E

Q53) What is characteristic of the oral route?

a. **Fast onset of effect**

b. **Absorption depends on GI tract secretion and motor function**

c. **A drug reaches the blood passing the liver**

d. **The sterilization of medicinal forms is obligatory**

Answer: C

Q54)Bioavailability differences among oral formulations of a drug are most likely to occur if the drug

a) **Is freely water soluble**

b) **Is completely absorbed**

c) **Is incompletely absorbed**

d) **Undergoes little first-pass metabolism**

Answer: C

Q55)All of the following about oral drug absorption is true EXCEPT:

a. The most variable route of administration

b. **The most complicated of administration**

c. **Duodenum is the major site of entry to the systemic circulation**

d. **Most drugs absorbed from the gastrointestinal tract enter directly the systemic circulation**

e. **First-pass metabolism by the liver limits the efficacy of many drugs.**

Answer: B

Q56) Pick the feature of the sublingual route:

a) **Pretty fast absorption**

b) **A drug is exposed to gastric secretion**

c) **A drug is exposed more prominent liver metabolism**

d) **A drug can be administrated in a variety of doses**

Answer: A

Q57)Correct statements listing characteristics of a particular route of drug administration include all of the following EXCEPT:

a) **Intravenous administration provides a rapid response**

b) **Intramuscular administration requires a sterile technique**

c) **Inhalation provides slow access to the general circulation**

d) **Subcutaneous administration may cause local irritation**

Answer: C

Q58)Parenteral administration:

a) **Cannot be used with unconsciousness patients**

b) **Generally results in a less accurate dosage than oral administration**

c) **Usually produces a more rapid response than oral administration**

d) **Is too slow for emergency use**

Answer: C

Q59)What is characteristic of the intramuscular route of drug administration?

a) **Only water solutions can be injected**

b) **Oily solutions can be injected**

c) **Opportunity of hypertonic solution injections**

d) **The action develops slower, than at oral administration**

Answer: B

Q60)Intravenous injections are more suitable for oily solutions:

a. **True**

b. **False**

Answer: B

Q61)Which of the following routes have the highest bioavailability?

A- Oral

B- Rectal

C- SC

D- More than one answer

Answer: C

Q62)Pick out the appropriate alimentary route of administration when passage of drugs through liver is minimized:

a. Oral

b. Transdermal

c. Rectal

d. Intraduodenal

Answer: C

Q63)Which of the following is disadvantage of IM administration?

- **A- Larger volumes can be used**
- **B- Can affect lab test**
- **C- Painful**
- **D- A and C**
- **E- B and C**

Answer: E

Q64)A 79-year-old man with end-stage Alzheimer's disease and dysphagia is taking multiple medications. Physical examination reveals xerostomia and a limited gag reflex. Which of the following routes of medication administration would provide the lowest serum drug concentration?

a) **Enteral**
b) **Intramuscular**
c) **Intrathecal**
d) **Intravenous**
e) **Transdermal**

Answer: A

Q65)A 15-year-old boy who has diabetes and is insulin dependent is brought to the emergency department after collapsing at a baseball game. His blood sugar is 463 mg/dL by finger stick. Which of the following routes of administration would be most efficacious for medications to bring the blood sugar down?

a) **Intramuscular**
b) **Intravenous**
c) **Sublingual**
d) **Subcutaneous**

Answer: B

Q66)In an anaesthetized dog, repeated intravenous injection of ephedrine shows the phenomenon of

a) **Anaphylaxis**

b) **Tachyphylaxis**

c) **Idiosyncrasy**

d) **Drug resistance**

Answer: A

Q67)Which of the following therapeutic systems provides continuous, unattended, controlled drug input for a long period without gastrointestinal or hepatic drug inactivation prior to systemic circulation ?

a) **Parenteral**

b) **Oral**

c) **Transdermal**

d) **All the above**

e) **None of the above**

Answer: C

Q68)Volatile drug may be best administered by:

a) Oral route

b) Inhalation

c) Sublingual route

d) Intrathecal route

e) Rectal route

Answer: B

Q69)The main route of administration of a drug to produce a local effect is

a) **Topical**

b) **Oral**

c) **Parenteral**

Answer: A

Q70)When a drug has a low therapeutic index, that drug should be

a) **Used mostly orally**

b) **Used mostly intravenously**

c) **Considered a potentially toxic substance**

d) **Given only in submilligram doses**

Answer: C

Q71)Biotransformation of the drugs is to render them:

a) **Less ionized**

b) **More pharmacologically active**

c) **More lipid soluble**

d) **Less lipid soluble**

Answer: D

Q72)Biotransformation of medicinal substance results in:

a. **Faster urinary excretion**

b. **Slower urinary excretion**

c. **Easier distribution in organism**

d. **Higher binding to membranes**

Answer: A

Q73)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.**

Answer: D

Q74)All of the about reaction of drug metabolism is correct EXCEPT:

a. **Water soluble drugs must first be metabolized in the liver**

b. **Phase 1 reaction function to convert lipophilic molecules into lipophobic molecules**

c. **Phase 1 reactions involved in drug metabolism catalyzed by the p450 system**

d. **Phase II include conjugation with endogenous substances**

Answer: A

Q75) Which of the following is entirely microsomal?:

a. **Acetylation and methylation of substances**

b. **Transformation of substances due to oxidation, reduction or hydrolysis…**

c. **Glucuronide formation**

d. **The use of Ziegler's enzyme**

Answer: E

Q76)All of the following about drug metabolism is true EXCEPT:

a) **Pro-drugs must be metabolized to their active forms**

b) **First-order kinetics metabolism means that a constant amount of drug is metabolized per unit of time**

c) **Zero-order kinetics metabolism the enzyme is saturable**

d) **Ethanol follows zero order kinetics**

e) **None of the above**

Answer: B

Q77)Pick out the right statement:

a) **Microsomal oxidation always results in inactivation of a compound**

b) **Microsomal oxidation results in a decrease of compound toxicity**

c) **Microsomal oxidation results in an increase of ionization and water solubility of a drug**

d) **Microsomal oxidation results in an increase of lipid solubility of a drug thus its excretion from the organism is facilitated**

Answer: C

Q78)Conjunction is:

a. **Process of drug reduction by special enzymes**

b. **Process of drug oxidation by special oxidases**

c. **Coupling of a drug with an endogenous substrate**

d. **Solubilization in lipids**

Answer: A

Q79)Metabolic transformation and conjugation usually results in an increase of a substance biological activity:

a. **True**

b. **False**

Answer: B

Q80)The addition of glucuronic Acid to drug

- **a- Lowers its water solubility.**
- **b- Usually leads to inactivation of the drug**
- **c- Is an example of Phase 1 reaction.**
- **d- Occurs at the same rate in adults and newborns.**
- **e- Involves cytochrome P450**

Answer: B

Q81)In case of liver disorders accompanied by a decline in microsomal enzyme activity, the duration of action of some drugs is:

- **a) Decreased**
- **b) Enlarged**
- **c) Remained unchanged**
- **d) Changed insignificantly**

Answer: B

Q82)An elder man was brought up to the emergency room for suspicion of Liver cirrhosis. His wife mentioned him having severe headache throughout the day, making swallow up to 10 analgesic analgesic pills which she forgot the name of. What was the drug?

- **a. NAISD**
- **b. Isoniazid**
- **c. Acetaminophen**
- **d. Halothane**
- **e. None of the above**

Answer: E

Q83)One of the following drugs undergoes metabolism just to be more effective and is the less-active form of morphine,

a. **Levodopa**
b. **Enalapril**
c. **Codeine**
d. **Minoxidil**

Answer: C

Q84)One of the following drugs can be used to reduce blood pressure in patients with Chronic Renal Insufficiency:

a. **Aspirin**
b. **Enalapril**
c. **Digoxin**
d. **Atenolol**

Answer: B

Q85)CYT3A4 heavily contributes to what part of Liver metabolism?

a. **Conjugation**
b. **Oxidation**
c. **Reduction**
d. **Hydrolysis**

Answer: B

Q86)All of the following is true EXCEPT:

a. **UGT is the predominant Phase 2 enzyme for lifetime**
b. **Glutathione conjugates are excreted in bile or are converted to mercapturic acid**
c. **For the sake of drugs' inactivation, Methyltransferase may be used.**

d. N-acetylated cysteine conjugates appear in urine by Active transport.

Answer: A

Q87)Which drug after undergoing Acyl glucuronidation Become insanely reactive?

a. Ibuprofen
b. Paracetamol
c. NASIDs
d. A+B
e. A+C

Answer: E

Q88)Paracetamol undergoes both Acetylation and Glucuronidation but without GSH the alternative CYT-450 dependent pathway causes hepatoxicity.

a. True
b. False

Answer: B

Q89)Which of the following drugs may inhibit the hepatic microsomal P450 and contains Imidazole group

a) Cimetidine
b) Ethanol
c) Phenobarbital
d) Procainamide
e) Rifampin

Answer: A

Q90)Antiepileptic drug, leads to tolerance to drug ,after 2-3 weeks it will not activate its metabolism and it is needed to increase the dose and ultimately inhibits the hepatic microsomal enzymes.

a) Ethanol

b) St. John's wort

c) Ritonavir

d) Byproduct of tobacco

e) Carbamazepine

Answer: E

Q91)Which one of the statements regarding microsomal enzymes is not correct

a) They lack specificity

b) Capable of metabolizing substances of different structure

c) Only catalyze reaction of compounds which are lipid insoluble

d) All the above

Answer: C

RANDOM

Q92)An 82-year-old man is admitted to the hospital after a new diagnosis of multiple myeloma. Treatment is initiated with bortezomib, lenalidomide, and dexamethasone. Intravenous morphine is administered at regular intervals for control of bone pain. Two days later his creatinine increases from 1.0 to 2.3 mg/dL. He is noted to be lethargic with respirations of 8/min (normal >12). Naloxone is administered and he becomes more alert with increased respirations. Which of the following may explain his response to morphine?

a) Decreased bioavailability

b) Increased volume of distribution

c) Accumulation of morphine metabolites

d) Inhibition of liver P450 enzymes

e) Downregulation of opioid receptors

Answer: C

Q93)A 5-year-old boy is brought to the emergency room by his mother. One hour ago, he ingested an unknown quantity of one of her prescription medications. Serum testing shows the boy's drug level is 5 mg/dL. The drug is known to have a half life of 1 hour, a volume of distribution of 150 ml, a bioavailability of 50%, and follow first-order elimination kinetics. Which of the following doses did the boy ingest?

a) 15mg

b) 20mg

c) 30mg

d) 40mg

e) 60mg

Answer: C

Q94)A 45-year-old man is started on an intravenous neuroleptic drug for treatment of seizures. His weight is 75 kg. The drug has a volume of distribution of 0.5 L/kg. If the desired serum concentration is 20 mg/L, what is the appropriate loading dose?

a) 37.5mg

b) 100mg

c) 375mg

d) 750mg

e) 1500mg

Answer: D

Q95)A 45-year-old man is started on an intravenous neuroleptic drug for treatment of seizures in the hospital. He achieves a steady state plasma drug

concentration of 20 mg/L. After no seizure activity for 48 hours, plans are made to discharge him on an oral form of his seizure drug. The drug's clearance rate is 0.25 L/hr and bioavailability is 50%. Which of the following is an appropriate oral dosing regimen?

a) **10mg once per day**

b) **20mg twice per day**

c) **120mg twice per day**

d) **1000me twice per day**

e) **2000mg once per day**

Answer: C

Q96)You are currently employed as a clinical researcher working on clinical trials of a new drug to be used for the treatment of Parkinson's disease. Currently, you have already determined the safe clinical dose of the drug in a healthy patient. You are in the phase of drug development where the drug is studied in patients with the target disease to determine its efficacy. Which of the following phases is this new drug currently in?

a) Phase 1

b) Phase 2

c) Phase 3

d) Phase 4

Answer: B

Q97)A 49-year-old man with diabetes mellitus takes subcutaneous insulin for his insulin-dependent diabetes mellitus. He takes 4 U of regular insulin every 12 h to maintain his blood sugar in the range of 80 to 140 mg/dL. This route of

administration allows for absorption of insulin by which of the following processes?

a) **active transport**

b) **Facilitated transport**

c) **Osmosis**

d) **Passive transport**

e) **Simple diffusion**

Answer: E

Q98)An 80-year-old male nursing home resident is hospitalized on a morphine drip to control pain for his terminal metastatic pancreatic cancer. Morphine undergoes phase I and phase II metabolism in the liver as well as being metabolized by other enzymes. Some of these metabolic reactions decrease with age. Which of the following metabolic reactions is likely still intact in this patient? (A)

a) **Glucuronidation**

b) **Hydrolysis**

c) **Oxidation**

d) **Reduction**

e) **Unmasking of a functional group**

Answer: A

Q99)A 44-year-old black male is brought to the emergency department with 6 h of worsening lethargy and confusion. Past medical history is significant for easy bruising, 3 months of bone pain, and frequent pneumococcal infections. Labs were ordered, revealing serum calcium of 17 mg/dL (normal: 9.0 to 10.5 mg/dL). To rapidly lower his serum calcium, you administer calcitonin. However, calcitonin alone is insufficient because it is known to rapidly and suddenly lose its effectiveness within 2 to 3 days of repeated dosing. For this reason, a bisphosphonate, which take 2 to 3 days to become effective, is added simultaneously. What is the term for the rapid decrease in response to calcitonin?

a) Anaphylaxis
b) Prophylaxis
c) Tachyphylaxis
d) Tolerance

Answer: A

Q100)Regarding the use of a daily baby aspirin, oral fiber supplements, and a daily "water" pill in an 89-year-old man with hypertension and coronary artery disease, which of the following statements is true regarding pharmacology in the elderly patient?

a) Coexisting disease states are unlikely to produce additive impairment
b) Elderly patients are less sensitive to drug effects
c) Elderly patients are less sensitive to drug side effects
d) Elimination of drugs becomes impaired with age
e) Responses to compensate for drug accumulation are satisfactory

Answer: D

Q101)When comparing the administration of local anesthesia in a 4-year-old healthy boy to an 80-year-old man with a history of hypertension, cirrhosis, and diabetes, which of the following statements is likely to be true?

a) Liver failure is less likely a problem in the older patient
b) Maximal dose of anesthetic must be calculated
c) Older patients require higher doses of anesthetic
d) Older patients will have a better response to anesthetic
e) Younger patients will have a better response to anesthetic

Answer: B

Q102)Drug A and Drug B are of equal magnitude. If Drug A and Drug B are combined together, this would be an example of which of the following?

a) **Additive effects**

b) **Neutralization**

c) **Potentiation**

d) **Synergism**

Answer: A

Q103)A new vasopressor in development, Drug X, is a partial agonist at a1-adrenergic receptors. Epinephrine is a full agonist at these same receptors. Which of the following statements is true regarding the potency of Drug X compared to epinephrine?

a) **Drug X and epinephrine are equally potent because they act on the same receptors**

b) **Drug X is more potent because it is a partial agonist**

c) **Epinephrine is more potent because it is a full agonist**

d) **Epinephrine is more potent because it is an endogenous neurotransmitter**

e) **Relative potency cannot be determined from the information given**

Answer: E

Q104)Healthy adult volunteers are enrolled in a phase 1 clinical trial investigating the properties of a newly developed oral antimicrobial agent. The drug is administered in different amounts to the volunteers over the course of several weeks to determine the best dosage that minimizes toxicity while maintaining trough levels above the minimum inhibitory concentration. While reviewing the data, the researchers note that the drug's half-life seems to vary amongst the study participants. An increase in which of the following pharmacologic parameters is most likely responsible for the longer half-life seen in certain individuals?

a) **Drug glucuronidation**

b) **Glomerular filtration rate**

c) **Oral bioavailability**

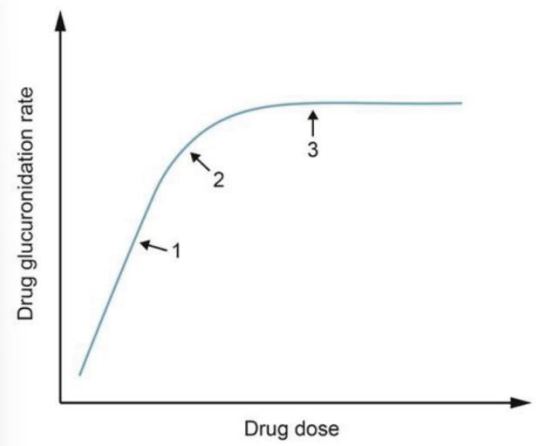
d) **Peak serum drug levels**

e) **Volume of distribution**

Answer: E

"Drug concentrations in body compartments will vary according to the physicochemical properties of the drug. Thus, V_d is a characteristic property of the drug rather than the patient, although disease states may influence V_d "

Q105)A large, multinational drug corporation conducts a phase 1 clinical trail to evaluate the safety profile and pharmacokinetics properties of a new drug designed to treat refractory epilepsy. Initial studies showed that the drug undergoes extensive metabolism by the liver into glucuronidation byproducts that are primarily excreted by the kidneys. The curve bellow demonstrates the glucuronidation rate of the drug over a wide range of doses.



a) **A constant proportion of the drug is metabolized past point 3**

b) **Bioavailability of the drug is highest at point 1**

c) **Biotransformation of the drug ceases near point 2**

d) **Metabolism begins to switch to zero-order kinetics near point 2**

e) **The rate of drug metabolism is not dependent on dose before point 1**

Answer: D

"PROPORTION not the actual dose's concentration."

Q106)A new aminoglycoside antibiotic is developed that is believed to be particularly effective against Pseudomonas. The volume of distribution of the drug is measured in a group of volunteers and is determined to be 4.5 L. This new drug is most likely to have which if the following properties:

a) **It has low molecular weight**

b) **It is lipophilic**

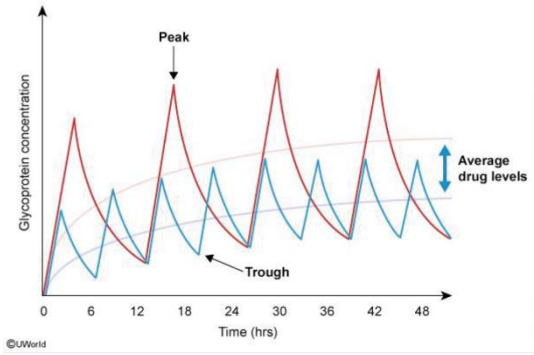
c) **It doesn't bind to albumin**

d) **It is highly charged**

e) **It has high bioavailability**

Answer: D

Q107)Researchers are developing a new glycopeptide antibiotic similar to vancomycin. Susceptibility testing reveals that the new drug is bactericidal against gram-positive organisms at serum concentrations above 15 mcg/mL. Two different dosage regimens are developed to achieve a target serum trough concentration of 15-20 mcg/mL: one administered as 1 gram every 6 hours and the other as 2 grams every 12 hours. The two regimens are tested in healthy volunteers during an early-phase clinical trial, and the following pharmacokinetic profiles are obtained.



Compared to the 12-hour dosing regimen, the 6-hour regimen is most likely to exhibit which of the following features?

a. **Decreased renal clearance**

b. **Higher average plasma drug levels**

c. **Improved patient compliance**

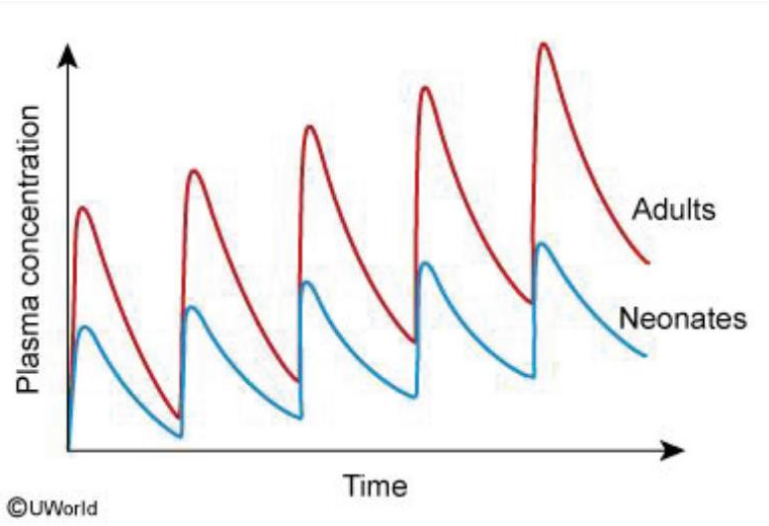
d. **Lower drug toxicity**

e. **Narrower therapeutic window**

Answer: D

Q108)Researchers develop a novel glycopeptide antibiotic similar to vancomycin(Hydrophilic drug) that is bactericidal against many Gram-positive bacteria. From animal studies, they determine that the effective drug dosage is 5 mg/kg/day administered intravenously in divided doses. In a clinical trial, the antibiotic is administered to adult and neonatal patients with gram-positive infections. The drug is found to be effective in adults but not in neonates. During further analysis, plasma concentrations of the drug are measured in both groups, with the results shown in the image below:

Compared to adults, which of the following neonatal factors is the most likely cause of the difference in drug effectiveness?



a) **Decreased CTY450 activity**

b) **Decreased renal blood flow**

c) **Elevated Plasma protein levels**

d) **High body water content**

Answer: D

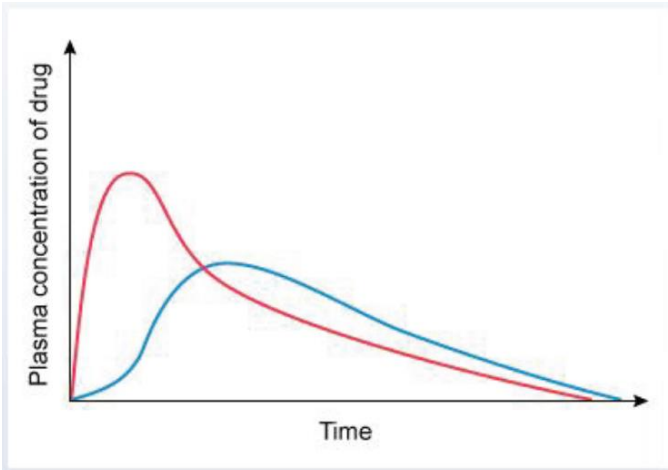
“A&B=Should have higher plasma concentration. Are you for real that infants have more plasma proteins than adults huh? The short story is that water-soluble drugs in infant have higher vd and thus lower plasma concentration.”

Q109)A 34-year-old kidney transplant patient treated with cyclosporine comes to the office due to nausea and anorexia. The patient underwent transplantation 6 months ago and had been doing well until recently. On examination, his blood pressure is 160/96 mm Hg. There is no tenderness at the site of the transplanted kidney. Serum creatinine is 3.4 mg/dL, and the serum cyclosporine level is markedly increased. A month ago, he had normal blood pressure and normal levels of cyclosporine and serum creatinine. Further questioning reveals that the patient has been drinking increased amounts of grapefruit juice lately as part of an attempt to improve his overall health. Which of the following mechanisms is most likely responsible for this patient's current condition?

a) **Alteration of gastric acidity**
b) **Inhibition of cytochrome P450 enzymes in the gut wall**
c) **Modification of transmembrane drug transport**
d) **Pharmacodynamic potentiation**
e) **Reduction of plasma protein binding**

Answer: b

Q110)A pharmaceutical company in the final stages of designing a new nonsteroidal anti-inflammatory agent develops 2 different oral formulations of the drug. Two groups of volunteers are each administered a different formulation, and average plasma drug levels are monitored over the next 12 hours. The results are shown below:



a) **Delayed intestinal absorption**
b) **Enhanced CYP enzyme induction**
c) **Increased biliary excretion**
d) **Increased enterohepatic cycling**
e) **Reduced first-pass metabolism**

Answer: A

"B= Necessitate a steep decrease not a gradual one + It doesn't explain the delay in the beginning, C+D=If a drug is excreted into a bile and reabsorbed and excreted and so on, its half life should be longer than the red drug + It doesn't explain the delay. E= means that it should have a higher response than the red drug!"