

I. Choose one of the best answer (2% each)

1. Surface-active agents tend to enhance absorption due to

- (A) their effects on biological membrane
- (B) their effects on the dissolution rate of drugs
- (C) reduction of interfacial tension
- (D) A, B, and C
- (E) B and C only

2. Radioactive decay follows a

- (A) zero-order rate
- (B) first-order rate
- (C) second-order rate
- (D) fractional-order rate
- (E) mixed-order rate

3. Tablet hardness range is normally

- (A) 0.2-0.5 kg
- (B) 0.5-1.0 kg
- (C) 1.0-2.0 kg
- (D) 2.0-3.5 kg
- (E) 3.5-7.0 kg

4. Adsorption is a (an)

- (A) irreversible chemical reaction
- (B) reversible chemical reaction
- (C) physical phenomenon
- (D) complexation phenomenon
- (E) light-induced reaction

5. Enantiomers differ from one another in

- (A) spatial configuration
- (B) rotational formula
- (C) state of matter
- (D) substituent groups
- (E) stability

6. The type of instability known as "bleeding" is usually associated with

- (A) isotonic solutions
- (B) emulsions
- (C) ointments
- (D) alcoholic solutions
- (E) suspensions

(背面仍有題目,請繼續作答)

7. Prednisone is converted to which of the following by the liver

- (A) Cortisone
- (B) Hydrocortisone
- (C) Prednisolone
- (D) Methylprednisolone
- (E) Dexamethasone

8. Which of the following factors is (are) important in the delivery of drug to the intended site of absorption with a metered dose inhaler

- I. Particle size and shape
 - II. Physicochemical properties of the active ingredient
 - III. Use of an oral adaptor
- (A) I only
 - (B) III only
 - (C) I and II only
 - (D) II and III only
 - (E) I, II, and III

9. Drugs subject to a significant first-pass effect following oral administration include

- I. Propranolol
 - II. Nifedipine
 - III. Nitroglycerin
- (A) I only
 - (B) III only
 - (C) I and II only
 - (D) II and III only
 - (E) I, II, and III

10. The limulus test is relatively new method of testing for

- (A) pyrogens
- (B) microbial growth
- (C) acidity
- (D) creaming
- (E) lack of osmolarity

11. True statement about D5W include all of the following EXCEPT

- (A) its pH range is 8 to 10
- (B) it is isotonic
- (C) it is a 5% solution of D-glucose
- (D) it should be used with caution in diabetic patients
- (E) it is often used in intravenous admixtures

12. Which needle has the largest diameter

- (A) 22-gauge x 1"
- (B) 25-gauge x 3/4"
- (C) 26-gauge x 5/8"
- (D) 24-gauge x 1/2"
- (E) 20-gauge x 3/8"

II. Choose one of the best answer (3% each)

1. Based on the relationship between the degree of ionization and the solubility, a weak acid drug ($pK_a = 3.49$) will be most soluble at:

- (A) pH 1.0
- (B) pH 2.0
- (C) pH 3.0
- (D) pH 5.0
- (E) pH 6.0

2. All the following statements concerning chemical degradation are true EXCEPT:

- (A) as temperature increases, degradation decreases
- (B) most drug degrade by a first-order process
- (C) chemical degradation may produce a toxic product
- (D) chemical degradation may result in a loss of active ingredients
- (E) chemical degradation may affect the therapeutic activity of a drug

3. The route of drug administration that gives the most rapid onset of the pharmacological effect is

- (A) intradermal injection
- (B) oral administration
- (C) intravenous injection
- (D) intramuscular injection
- (E) subcutaneous injection

4. The term bioavailability refers to the

- (A) relationship between the physical and chemical properties of a drug and the systemic absorption of the drug
- (B) movement of a drug into the body tissue over time
- (C) dissolution of a drug in the gastrointestinal tract
- (D) amount of drug destroyed by the liver prior to systemic absorption from the gastrointestinal tract
- (E) measurement of the rate and amount of therapeutically active drug that reach the systemic circulation

(背面仍有題目,請繼續作答)

5. All the following are characteristics of an active transport process EXCEPT
- (A) active transport moves drug molecules against a concentration gradient
 - (B) active transport is a carrier-mediated transport system
 - (C) active transport requires energy
 - (D) active transport follows Fick's law of diffusion
 - (E) active transport of drug molecules may be saturated at high drug concentrations
6. The intensity of pharmacological action of a drug is most dependent on the
- (A) concentration of the drug at the receptor site
 - (B) elimination half-life ($t_{1/2}$) of the drug
 - (C) onset time of the drug after oral administration
 - (D) minimum toxic drug concentration (MTC) in the plasma
 - (E) minimum effective concentration (MEC) of the drug in the body
7. The renal clearance of inulin is used as a measurement of
- (A) effective renal blood flow
 - (B) rate of renal drug excretion
 - (C) glomerular filtration rate (GFR)
 - (D) active renal secretion
 - (E) intrinsic enzyme activity
8. The initial distribution of a drug into the tissue is determined chiefly by the
- (A) stomach emptying time
 - (B) rate of blood flow to the tissue
 - (C) drug affinity for the tissue
 - (D) glomerular filtration rate (GFR)
 - (E) plasma protein binding
9. The relative bioavailability of a drug product can be determined by comparing which of the following values to similar control drug values?
- (I) Area under concentration-time curve (AUC)
 - (II) peak drug concentration
 - (III) total drug urinary excretion
- (A) I only
 - (B) II only
 - (C) I, and II only
 - (D) I and III only
 - (E) I, II, and III

10. The volume of distribution (V_d) of a particular drug will be
- (A) greater for drugs that concentrate in plasma rather than in tissues
 - (B) greater for drugs that concentrate in tissue rather than in plasma
 - (C) independent of tissue concentration
 - (D) independent of plasma concentration
 - (E) approximately the same for all drugs in a given individual
11. The term "prodrug" refers to a
- (A) chemical substance that is part of the synthesis procedure in preparing a drug
 - (B) compound which may be therapeutically active but is still under clinical trials
 - (C) compound that liberates an active drug in the body
 - (D) drug that has only prophylactic activity in the body
 - (E) drug that is classified as being "probably effective"
12. Which of the following salts forms an aqueous solution that is alkaline to litmus?
- (A) Sodium chloride
 - (B) Benzalkonium chloride
 - (C) Meperidine hydrochloride
 - (D) Cefazoline sodium
 - (E) Atropine sulfate

III. Please describe the physicochemical properties of a drug influencing drug product design and performance. (10%)

IV. Describe Arrhenius equation and its applications in pharmaceutics. (10%)

V. Describe the characteristics of, and the difference between, first-order and zero-order absorption processes. (10%)

VI. Describe the factors that affect the hepatic clearance of a drug. (10%)