

NAME \_\_\_\_\_  
*Please Print*

**DENTAL PHARMACOLOGY  
EXAMINATION # 2**

**March 16, 2006**

*Corrected*

You have ONE (1) hour and 15 minutes to complete this examination. The examination contains 50 questions, each worth 2 points.

Answer all questions on the computer sheet provided; use a soft lead pencil. Be sure that you have correctly identified your answer sheet by PRINTING your name and TU id number and correctly filling in the grid spaces. You may keep your exam booklet. Answers and grades will be posted on Blackboard.

This examination is being administered under the Honor Code of Temple University Dental School.

Questions 1 - 50: Select the single, most appropriate answer.

1. Which of the following antihypertensive drugs is most likely to produce dry cough and hyperkalemia as side effects?
  - A. Hydralazine
  - B. Hydrochlorothiazide ~~X~~
  - ☒ C. Captopril ACE
  - ~~D. Propranolol~~  $\beta$  blocker
  - E. Prazosin
2. Before beginning folate therapy for megaloblastic anemia, the physician should consider which of the following to prevent neurological disease?
  - ☒ A. Vitamin B<sub>12</sub> deficiency
  - B. Zinc deficiency
  - C. Iron deficiency
  - D. Vitamin B<sub>6</sub> deficiency
3. Which of the following drugs is the first line of treatment for iron deficiency anemia?
  - ☒ A. Oral ferrous sulfate
  - B. Parenteral iron dextran
  - C. Deferoxamine
  - D. Vitamin B<sub>12</sub>
  - E. Folic acid
4. Which of the following best describes the mechanism by which simvastatin lowers LDL levels?
  - ~~A. Inhibits lipoprotein lipase activity~~
  - B. Binds bile acids in the gastrointestinal tract, preventing reabsorption
  - C. Inhibits lipolysis in adipose tissue
  - D. Stimulates lipoprotein lipase activity
  - ☒ E. Leads to an increase in the number of LDL ~~X~~ receptors on liver cells
5. Which of the following antiarrhythmic drugs is likely to have the LEAST effect on the normal EKG?
  - A. Quinidine
  - ☒ B. Lidocaine
  - C. Bretylium
  - D. Verapamil
  - E. Procainamide

6. Cinchonism is a syndrome associated with which of the following drugs?

- ☒ A. Quinidine
- B. Digoxin
- C. Bretylium
- D. Procainamide
- E. Propranolol

7. Which of the following statements best describes the effect of warfarin?

- A. It enhances the degradation of factor V
- B. It directly inhibits thrombin
- ☒ C. It inhibits the action of vitamin K
- D. It binds to the calcium ion cofactor needed for activation of clotting factors
- E. It inhibits platelet aggregation

*Caution*  
*Inhibits Synthesis*

8. Which of the following statements best describes the mechanism of abciximab?

- A. Acts as an antagonist of the platelet ADP receptor
- B. Inhibits cyclooxygenase
- C. Blocks the platelet thrombin receptor
- ☒ D. Blocks the platelet fibrinogen receptor
- E. Acts as an antagonist at the platelet thromboxane receptor

9. All of the following are attributes of digoxin EXCEPT:

- ☒ A. Causes diuresis due to carbonic anhydrase inhibition
- B. Increases intracellular calcium
- C. Causes prolongation of the P-R interval of the electrocardiogram
- D. Increases cardiac contractility
- E. Increases ventricular automaticity

10. Acute effects of ethanol are most likely to include

- ☒ A. Sedation, vasodilation and ataxia
- B. Mydriasis, constipation and urinary retention
- C. Sedation, miosis and constipation
- D. Hypertension and tachycardia
- E. Hyperthermia and hyperglycemia

11. All of the following statements about local anesthetics are true **EXCEPT:** *changed form*
- A. The cationic form of ropivacaine is the active form at its site of action
  - B. Benzocaine is used only for topical application
  - C. Bupivacaine is cardiotoxic
  - D. Local anesthetics tend to be less effective in infected tissues ✓
  - ☒ E. The purpose of adding epinephrine in lidocaine preparations is to decrease enzymatic degradation of lidocaine
12. A 65-year-old patient was prescribed digoxin and hydrochlorothiazide. On a second visit two weeks later, a blood test was done, and amiloride was added to the regimen. What did the blood test reveal that required the amiloride? *KsPanner*
- A. Hyponatremia
  - ☒ B. Hypokalemia
  - C. Hyperglycemia
  - D. Hyperuricemia
  - E. Hypercalcemia
13. Which of the following would LEAST characterize acetazolamide?
- A. Carbonic anhydrase inhibition ✓
  - B. Production of hypokalemia ✓
  - C. Increased bicarbonate in urine ✓
  - D. Usefulness in treatment of glaucoma ✓
  - ☒ E. Development of metabolic alkalosis *acidosis*
14. Therapy with which class of drugs would most likely result in the development of hypokalemia, hyperglycemia, hyperuricemia, and hypercalcemia?
- A. A potassium sparing diuretic
  - B. A loop diuretic
  - C. A xanthine diuretic
  - ☒ D. A thiazide diuretic
  - E. An osmotic diuretic
15. Actions of xanthines include all of the following **EXCEPT:**
- ☒ A. Decrease in cerebral vascular resistance *77*
  - B. Bronchodilation ✓
  - C. Diuresis ✓
  - D. Myocardial stimulation ✓
  - E. Central nervous system stimulation ✓

16. Which of the following mucolytics is most valuable in treating acetaminophen overdose?

- A. Guaifenesin
- B. Potassium iodide
- ☒ C. Acetylcysteine
- D. Terpin hydrate
- E. Ipecac

17. Which of the following drugs is an effective bronchodilator, has the greatest degree of beta-2 adrenergic receptor selectivity, produces less cardiac stimulation than isoproterenol, and may cause tremor with oral use?

- ☒ A. Albuterol
- B. Beclomethasone
- C. Aminophylline
- D. Phenylephrine
- E. Zileuton

18. Which of the following drugs is a leukotriene receptor antagonist used in the treatment of bronchial asthma?

- A. Aminophylline
- B. Beclomethasone
- C. Salmeterol
- ☒ D. Zafirlukast
- E. Zileuton

19. Which of the following drugs, used in the treatment of angina, is most likely to induce tolerance?

- A. Nitroglycerin – sublingual
- B. Verapamil – parenteral *Ca*
- C. Amyl nitrite – inhalant
- D. Nicardipine – oral
- ☒ E. Nitroglycerin – transdermal patch

20. Which of the following antianginal drugs can induce gingival inflammation in long-term therapy?

- A. Metoprolol
- B. Isosorbide dinitrate
- C. Propranolol
- ☒ D. Diltiazem
- E. Atenolol

21. Which histamine receptor subtype on gastric parietal cells causes increased acid secretion?
- ☐ A. H<sub>1</sub> receptors
  - ☒ B. H<sub>2</sub> receptors
  - ☐ C. H<sub>3</sub> receptors
  - ☐ D. H<sub>4</sub> receptors
22. Which histamine receptor subtype is mediated by increases in inositol phosphate metabolism and increased intracellular calcium?
- ☒ A. H<sub>1</sub> receptors
  - ☐ B. H<sub>2</sub> receptors
  - ☐ C. Both H<sub>1</sub> and H<sub>2</sub> receptors
  - ☐ D. H<sub>4</sub> receptors
23. Naloxone will reverse the effects of which of the following drugs?
- ☐ A. Cocaine
  - ☐ B. Alprazolam
  - ☒ C. Fentanyl
  - ☐ D. Fluoxetine
  - ☐ E. Nitrous oxide
24. Which of the following drugs is most useful for the treatment of chronic pain, has high oral bioavailability and a long duration of action with chronic administration?
- ☒ A. Methadone *long duration of action*
  - ☐ B. Butorphanol
  - ☐ C. Meperidine
  - ☐ D. Propoxyphene
  - ☐ E. Morphine
25. An adverse drug - drug interaction has been documented in persons taking meperidine with which of the following drugs?
- CNS*
- ☐ A. Colchicine
  - ☐ B. Phenelzine
  - ☒ C. Propranolol *β blocker*
  - ☐ D. Valproic acid
  - ☒ E. Fluoxetine

26. A 21-year-old male is brought to the emergency room because of a drug overdose. His symptoms included convulsions, tachycardia and hyperthermia. Which one of the following drugs is the likely cause?

- ☒ A. Methylene-dioxymethamphetamine *ecstasy*
- ☐ B. ~~Heroin~~
- ☐ C. ~~Diazepam~~
- ☐ D. Lysergic acid diethylamine *LSD*
- ☐ E. ~~Ketamine~~

27. Acute intoxication with ketamine can produce which combination of effects?

- ☒ A. ~~Hallucinations and compelling visions~~
- ☐ B. Emotional openness and jaw clenching
- ☐ C. Arousal and tachycardia
- ☒ D. ~~Reduced sensations and pinpoint pupils~~
- ☐ E. Alertness and hyperthermia

28. The mechanism of action of acetylsalicylic acid is

- ☐ A. Inhibition of prostaglandin synthesis
- ☐ B. Inhibition of prostacyclin synthesis
- ☐ C. Inhibition of thromboxane synthesis ✓
- ☐ D. Non-selective inhibition of cyclooxygenases ✓
- ☒ E. All of the above

29. The pharmacokinetic properties of aspirin include

- ☐ A. Rapid metabolism in the gut
- ☐ B. Poor distribution to synovial fluid
- ☒ C. ~~Excretion in the urine~~
- ☒ D. ~~Gastrointestinal absorption which is slow and continuous over a period of hours~~
- ☐ E. Excretion in the bile

30. Acetaminophen is a drug which is frequently used to treat patients experiencing low-grade pain. It has a variety of desirable, and some undesirable properties, which include

- ☐ A. Strong anti-inflammatory properties
- ☒ B. ~~Rapid and complete absorption and distribution to most body fluids~~
- ☐ C. Strong selective inhibition of "inducible" cyclooxygenase with much less effect on "constitutive" cyclooxygenase activity.
- ☐ D. Is rarely suitable as an antipyretic for patients in whom aspirin is contraindicated ✓
- ☐ E. The development of peptic ulcers as a major adverse reaction ✓

31. After the failure of some patients to respond to treatment with non-steroidal anti-inflammatory drugs, it is often necessary to utilize one of the disease-modifying antirheumatic drugs (DMARDs). A commonly prescribed DMARD is auranofin. This drug carries a number of contraindications and potential adverse reactions. Which of the following statements about auranofin is true?

- ☒ A. Can induce dermatologic reactions including dermatitis
- ☐ B. Is a selective inhibitor of DNA synthesis, and is commonly employed as an anti-cancer therapeutic
- ☒ C. Anti-inflammatory effects are due to selective chelation of pro-inflammatory cytokines in joint tissue
- ☐ D. Is frequently employed because unlike other DMARDs it is unable to induce peripheral neuropathies even after prolonged use
- ☐ E. Is a metabolite of penicillin, and works by trapping free radicals

32. Which one of the following agents is an endogenous ligand for cannabinoid receptors?

- ☐ A. Met-enkephalin
- ☐ B. Dronabinol
- ☒ C. Anandamide
- ☐ D. Beta-endorphin
- ☐ E. Dynorphin

33. All of the following are true about diphenhydramine EXCEPT:

- ☐ A. Blocks H<sub>1</sub>-histamine receptors ✓
- ☐ B. Causes sedation ✓
- ☐ C. Has antimuscarinic side effects ✓
- ☒ D. Has anti-androgenic side effects
- ☐ E. Relieves symptoms of allergic reactions ✓

34. In which of the following patients is primary therapy with hydrochlorothiazide for hypertension more effective than other drugs?

- ☐ A. A patient with gout
- ☐ B. A patient with hyperlipidemia
- ☐ C. Young patients with rapid resting heart rate
- ☒ D. Black patients and elderly patients ✓
- ☐ E. Patients with impaired renal function



21. Which?
35. A patient with renal failure begins to show signs of anemia. Which of the following drugs would be most likely to relieve the anemia?
- A. Vitamin B<sub>12</sub>
  - B. Folic acid
  - ☒ C. Erythropoietin
  - D. Ferrous sulfate
36. The mechanism by which colestipol lowers LDL levels is that it
- A. Inhibits lipolysis in adipose tissue
  - B. Stimulates lipoprotein lipase activity
  - C. Inhibits HMG CoA reductase
  - D. Inhibits lipoprotein lipase activity
  - ☒ E. Binds bile acids in the gastrointestinal tract, preventing reabsorption
37. The most likely effect of a therapeutic dose of procainamide on the normal EKG includes
- A. An initial increase in heart rate followed by a decrease X
  - B. An initial lengthening of the PR interval followed by a shortening X
  - C. A shortening of the QT interval
  - ☒ D. A widening of the QRS complex
  - ☒ E. None of the above
38. The most frequent adverse reaction common to all thrombolytic therapies is
- A. Respiratory depression
  - B. Hepatic necrosis
  - C. Renal damage
  - D. Hypertension
  - ☒ E. Excessive bleeding
39. Adverse effects of digoxin include all of the following **EXCEPT**:
- A. Nausea ✓
  - B. Visual disturbances ✓
  - ☒ C. A-V nodal block
  - D. Cardiac arrhythmias ✓
  - ☒ E. Hepatotoxicity

40. A 60-year-old man presents to the emergency room complaining of blurred vision, "like seeing through a snowstorm". His breath smells like formaldehyde. The physician is concerned about blindness and renal damage. He has most likely ingested

- A. Ethanol
- B. Acetaminophen
- ☒ C. Methanol
- D. Disulfiram
- E. Chlorpromazine

41. All of the following statements about local anesthetics are true **EXCEPT**:

- A. Overdose of local anesthetics can induce seizures ✓
- B. Local anesthetics act on the intracellular side of voltage-sensitive sodium channels to produce their effects
- C. Local anesthetics can be used for Bier block to provide regional anesthesia for short procedures (<45 min) of lower limbs
- D. Effects of local anesthetics are more pronounced in rapidly-firing neurons than in slowly-firing neurons
- ☒ E. If a patient is allergic to tetracaine, he or she will be equally allergic to prilocaine

42. Therapy with which class of drugs, especially if given rapidly and in amounts higher than the normal recommended dose, may result in the development of hypokalemia, hypocalcemia, hyperuricemia and ototoxicity?

- A. A potassium sparing diuretic
- B. A xanthine diuretic
- ☒ C. A loop diuretic
- D. A thiazide diuretic
- E. An osmotic diuretic

43. Characteristics of dextromethorphan include all of the following **EXCEPT**:

- A. Is centrally active ✓
- B. Has antitussive action ✓
- C. May be abused ✓
- D. May cause histamine release ✓
- ☒ E. Is a natural opium alkaloid

44. Which of the following drugs prevents leukotriene synthesis by inhibiting 5-lipoxygenase? terdose  
nick one of

- A. Formoterol
- B. Ibuprofen
- ☒ C. Zileuton
- ☒ D. Zafirlukast
- E. Aminophylline

45. A patient is treated with propranolol for angina pectoris. Which of the following drugs would be less effective during a dental procedure in this patient?

- A. Aspirin
- ☒ B. Epinephrine
- C. Nifedipine
- D. Amyl nitrite
- E. Amlodipine

*β Blocker*

46. All of the following drugs are agonists at mu opioid receptors EXCEPT:

- A. Meperidine ✓
- B. Methadone ✓
- C. Beta-endorphin
- ☒ D. Nalbuphine
- ☒ E. Tramadol

47. A 57-year-old male patient with diabetes needs a high efficacy analgesic for pain associated with metastatic carcinoma. Which drug would be most effective in this patient?

- A. Propoxyphene
- B. Indomethacin
- C. Codeine
- ☒ D. Oxycodone
- E. Aspirin

48. All of the following statements are true with regard to amphetamine EXCEPT:

- A. Increases blood pressure and heart rate ✓
- B. Can be taken orally, or intravenously ✓
- ☒ C. Is a dopamine reuptake inhibitor
- D. Physical dependence can occur with chronic use ✓
- ☒ E. Shows some cross-tolerance with cocaine

49. Ibuprofen is a useful (and very popular) non-steroidal anti-inflammatory drug. The characteristics of this drug include that ibuprofen

- ☒ A. Is a potent inhibitor of the synthesis of tumor necrosis factor-alpha
- ☒ B. Is a potent inhibitor of bradykinin synthesis
- ☐ C. Is much more likely than aspirin to cause a gastrointestinal adverse reaction
- ☒ D. Does not exhibit the beneficial cardiovascular effects that are observed with aspirin
- ☐ E. Is a highly selective cyclooxygenase-2 inhibitor

50. Three rhesus monkeys are rendered physically dependent on morphine. Each animal then receives a biologically active dose of compound X by subcutaneous injection. Signs of abstinence appear within 10 minutes. Compound X is most likely to be

- ☐ A. Dronabinol
- ☐ B. Delta-9 THC
- ☐ C. Oxycodone
- ☒ D. Pentazocine
- ☒ E. Fentanyl

(END OF EXAM)