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Name



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**DENTAL PHARMACOLOGY
EXAM II**

March 3, 2005

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 social security 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 drugs acts to increase lipoprotein lipase to enhance clearance of VLDL from plasma?

↑ LPL

A. Pravastatin

☒ B. Niacin

C. Colestipol

☒ D. Gemfibrozil *↑ triglyc*

E. Neomycin

2. All of the following statements concerning the mechanism of action of drugs used to treat cardiac arrhythmias are true EXCEPT:

☒ A. Muscarinic antagonists are useful in treatment of tachycardias

☒ B. Verapamil is a calcium channel blocker effective in treating supraventricular arrhythmias

☒ C. A side effect of quinidine is cinchonism (blurred vision, tinnitus, etc.)

☒ D. Amiodarone has multiple side effects which limit its use

☒ E. Phenytoin causes gingival hyperplasia

3. The major side effect of heparin is

☒ A. Bleeding

☒ B. Fetal abnormalities

C. Elevation of hepatic transaminases

D. Allergic reactions

E. Inhibition of aldosterone synthesis

4. Which of the following drugs is the most sedating at clinically effective doses?

A. Cromolyn sodium

☒ B. Loratadine *2*

☒ C. Diphenhydramine *allergy*

☒ D. Cimetidine

E. Cetirizine

5. Which one of the following statements is true regarding cimetidine?

☒ A. It has antimuscarinic side effects

☒ B. It is devoid of antiandrogenic effects, even at high doses

☒ C. It is used to treat gastric ulcers by selectively blocking H₂ histamine receptors

☒ D. It enhances cytochrome P₄₅₀

E. It is the primary agent used in the emergency treatment of acute anaphylaxis

6. All of the following statements are true about digoxin EXCEPT:

- E
- ✓ A. Is useful in treatment of congestive heart failure
 - ✓ B. Inhibits the sodium-potassium ATPase pump
 - ✓ C. Increases the force of contraction of the heart
 - ✓ D. Causes nausea, visual disturbances and ventricular tachycardia
 - ✓ E. Causes sodium and water retention
NaCl

7. Which of the following drugs is an inhibitor of angiotensin converting enzyme useful in the treatment of congestive heart failure? ACE

- C
- A. Hydralazine
 - B. Dobutamine
 - ✓ C. Enalapril
 - D. Furosemide
 - E. Isosorbide dinitrate

8. Which of the following drugs is most useful for acute chest pain in a patient with a history of angina pectoris?

- C
- A. Verapamil
 - ✓ B. Propranolol
 - ✓ C. Nitroglycerin
 - D. Nifedipine
 - E. Metoprolol

9. Nifedipine, either directly or through reflexes, produces all of the following effects

EXCEPT: *BP*

- B
- ✓ A. Coronary vasodilation
 - ✓ B. Hypertension *BP*
 - ✓ C. Peripheral vasodilation
 - D. Tachycardia *↑HR*

10. Before beginning folate therapy for megaloblastic anemia, one should consider which of the following to prevent neurological disease?

- A
- ✓ A. Vitamin B₁₂ deficiency
 - B. Zinc deficiency
 - C. Iron deficiency
 - D. Vitamin B₆ deficiency
 - E. Vitamin C deficiency

11. Orthostatic hypotension is a major side effect of all of the following classes of antihypertensive agents EXCEPT.

- ☐ A. Diuretics
☒ B. Angiotensin-converting enzyme inhibitors
☐ C. Direct vasodilating agents
☐ D. Alpha-adrenergic receptor blocking agents
☒ E. Ganglionic blocking agents

12. Following a dental procedure, a 65-year-old patient was instructed to use a tablespoonful of liquid medication diluted in a glass of water as an oral rinse twice daily for seven days. After the second dose on the third day, he developed a reaction, whereupon he immediately stopped using the liquid medication. How much of it was actually used?

- ☐ A. 15ml
☐ B. 30ml
☐ C. 45ml
☒ D. 90ml
☐ E. 210ml

6 tsp → 18 tsp → 90ml

13. An elderly patient develops a cardiovascular emergency during a dental procedure. You quickly decide to use some epinephrine, reach for an ampoule labeled "Epinephrine 1:1000" and administer 0.25ml. How much epinephrine did you use?

- ☐ A. 0.0025 milligrams
☐ B. 0.025 milligrams
☒ C. 0.25 milligrams
☐ D. 2.5 milligrams
☐ E. 0.25 micrograms

14. Which of the following statements are true for controlled substances?

- ☒ A. Prescriptions for Schedule II drugs must be in the pharmacy before the preparation is dispensed
☒ B. Prescriptions for Schedule II drugs may not be refilled
☒ C. Prescriptions for Schedule III drugs may be telephoned and dispensed, the prescription being subsequently forwarded to the pharmacy
☒ D. Prescriptions for Schedule III drugs may be refilled up to five times within a six month period if so authorized by the prescriber
☒ E. All of the above are true

15. Problems which could develop as a result of therapy with modern loop diuretics would LEAST likely include

- A. Hyperkalemia
B. Hyperglycemia
C. Hyperuricemia
D. Hypovolemia
E. Hyponatremia

16. Hypokalemia, hyperglycemia, hyperuricemia and hypercalcemia would most likely occur in a patient taking

- A. Acetazolamide
B. Ethacrynic acid
C. Hydrochlorothiazide
D. Hydrochlorothiazide - Spironolactone combination
E. Furosemide

17. A 75-year-old patient was started on hydrochlorothiazide therapy for his high blood pressure. On a subsequent visit several weeks later, a blood test was ordered, as a result of which triamterene was added to his daily regimen. What did the blood test show to necessitate the addition of triamterene?

- A. Hypokalemia
B. Hyperglycemia
C. Hyperuricemia
D. Hypercalcemia
E. Hyponatremia

18. Which of the following drugs has the greatest selectivity for beta-2 adrenergic receptors, is an effective bronchodilator, may cause tremors with oral use, and has minimal cardiac stimulation compared to nonselective beta-adrenoceptor agonists?

- A. Norepinephrine
B. Ephedrine
C. Epinephrine
D. Albuterol
E. Isoproterenol

19. Which of the following is a leukotriene receptor antagonist?

- A. Theophylline
B. Zileuton
C. Zafirlukast
D. Beclomethasone
E. Salmeterol

20. All of the following drugs have bronchodilating action **EXCEPT**:

- A. Epinephrine
- B. Isoproterenol
- C. Formoterol
- ☒ D. Cromolyn
- E. Albuterol

21. The action of xanthines in humans would **LEAST** likely include

- ☒ A. Central nervous system stimulation
- B. Myocardial stimulation
- ☒ C. Dilation of cerebral vasculature
- D. Bronchodilation
- ☒ E. Diuresis

22. Naloxone will precipitate an abstinence syndrome in individuals physically dependent on all of the following drugs **EXCEPT**:

- A. Oxycodone
- B. Heroin
- ☒ C. Pentobarbital
- ☒ D. Methadone
- E. Codeine

23. Successful detoxification of heroin addicts has been accomplished with all of the following compounds **EXCEPT**:

- ☒ A. Levomethadyl acetate
- ☒ B. Clonidine
- ☒ C. Buprenorphine
- ☒ D. Pentazocine
- ☒ E. Methadone

24. Aspirin produces all of the following effects **EXCEPT**:

- ☒ A. Analgesia
- ☒ B. Reduction of elevated body temperature
- ☒ C. Gastric irritation
- ☒ D. Decrease in inflammation
- ☒ E. Increase in platelet aggregation

anti-platelet

25. Acetaminophen is most likely to produce

*analgesic
ant- fever*

- B*
- ☐ A. A pulsating headache
 - ☒ B. Reduction of elevated body temperature
 - ☐ C. Gastric irritation and ulceration
 - ☐ D. Decrease in inflammation
 - ☐ E. Alterations in platelet aggregation

26. A 40-year-old female presents to the emergency room having taken a large overdose of acetaminophen. The physician is most concerned with production of

- D*
- A. Renal toxicity
 - B. Headache and tinnitus
 - C. Constipation and urinary retention
 - ☒ D. Delayed hepatotoxicity
 - E. Respiratory failure

27. Opioids produce their analgesic effects in the dorsal horn of the spinal cord by which of the following ionic mechanisms? *↓ K⁺*

- A*
- ☒ A. Reduction of calcium influx and increased potassium influx
 - B. Facilitation of calcium influx and activation of chloride ion channels
 - ☐ C. Decreased potassium channel opening and inhibition of sodium channels
 - D. Reduction of calcium and potassium influx
 - E. Inhibition of chloride ion channels and facilitation of sodium flux

28. A 50-year-old male requires treatment for severe pain prior to his dental procedure scheduled for the following day. Which of the following drugs would be most appropriate to prescribe for pain relief for this patient?

- D*
- ☐ A. Fentanyl *severe pain hospital*
 - ☐ B. Nalbuphine
 - C. Acetaminophen and codeine *mild to moderate pain*
 - ☒ D. Acetaminophen and oxycodone
 - E. Dihydrocodeine

29. Which of the following drugs has the lowest analgesic efficacy?

- B*
- ☐ A. Fentanyl
 - ☒ B. Propoxyphene
 - ☐ C. Codeine
 - D. Morphine
 - E. Dihydrocodone

30. Which one of the following agents has been shown to cause neuronal serotonin depletion and neurotoxicity?

- ☒ D. Methylene-dioxy-methamphetamine (MDMA)
A. Ketamine
B. Nitrous oxide
C. Cocaine
E. Lysergic acid diethylamide (LSD)

31. All of the following statements about drug abuse are true EXCEPT:

- ☒ A. Toxicity associated with gamma hydroxybutyrate is low due to its high therapeutic index
B. Physical dependence on a drug can occur in the absence of psychological dependence
C. Psychological dependence on a drug can occur in the absence of physical dependence
D. Lysergic acid diethylamide produces equal effects after oral and parenteral administration
E. Ketamine is an antagonist at NMDA receptors

32. Which of the following drugs is a resin that inhibits cholesterol reuptake from bile?

- ☒ C. Colestipol
A. Pravastatin
B. Niacin
D. Gemfibrozil
E. Neomycin

33. A drug has the following actions: i) decreases automaticity of the SA node; ii) decreases conduction rate in AV node, but not in atria or ventricles; iii) decreases myocardial contractility; iv) dilates coronary arteries. The drug is most likely a

- ☒ B. Calcium channel blocker
A. β -Adrenergic receptor agonist
C. Potassium channel blocker
D. Sodium channel blocker
E. Muscarinic receptor blocker

34. Which drug is best described by the following statements: I) no discernible effect on the electrocardiogram; II) not orally active due to liver metabolism?

- ☒ IV. A. Lidocaine
B. Amiodarone
C. Flecainide
D. Esmolol
E. Quinidine

35. A platelet antagonist that needs liver metabolism for activation:

- A. Aspirin
- B. Salicylate
- C. Abciximab
- D. Amicar
- E. Clopidogrel

36. Which of the following is true about warfarin?

- A. Raises the plasma level of factor IX
- B. Inhibits thrombin
- C. Inhibits the synthesis of prothrombin
- D. Binds the calcium ion cofactor
- E. Inhibits platelet aggregation

37. Which of the following statements is true about histamine and antihistamines?

- A. The second generation H₁ antagonists are more sedating than the first generation agents
- B. Histamine action at H₂ receptors induces increased cellular inositol metabolism and calcium levels
- C. Ranitidine has greater antiandrogenic effects than cimetidine
- D. Famotidine relieves seasonal allergy
- E. Diphenhydramine has antimuscarinic side effects

38. Which of the following drugs used in the treatment of congestive heart failure should be avoided in a patient with bronchial asthma?

- A. Digoxin
- B. Carvedilol
- C. Hydrochlorothiazide
- D. Captopril
- E. Inamrinone

39. A patient treated for angina pectoris can present with gingival overgrowth induced by

- A. Isosorbide dinitrate
- B. Nadolol
- C. Amyl nitrite
- D. Atenolol
- E. Diltiazem

40. A patient with renal failure begins to show signs of anemia. Which of the following agents would be most likely to relieve the anemia?

- A. Vitamin B₁₂
- B. Folic acid
- ☒ C. Erythropoietin
- D. Ferrous sulfate

41. A decrease in cardiac output and renin secretion are two of the most important mechanisms of which of the following classes of antihypertensive agents?

- ☒ A. Angiotensin-converting enzyme inhibitors
- B. Diuretics
- C. Alpha-adrenergic receptor blocking agents
- ☒ D. Beta-adrenergic receptor blocking agents
- ☒ E. Centrally acting antihypertensive agents

42. In a patient with glaucoma, which drug could prove most effective as a carbonic anhydrase inhibitor?

- A. Amiloride
- B. Furosemide
- C. Hydrochlorothiazide
- ☒ D. Acetazolamide
- E. Bumetanide

43. Each of the following drugs is correctly paired with one of its adverse effects EXCEPT:

- A. Amiloride - hyperkalemia
- B. Spironolactone - reduction in circulating androgen levels
- C. Furosemide in high doses - ototoxicity
- D. Prolonged thiazide therapy - increased plasma cholesterol
- ☒ E. Hydrochlorothiazide - hypercalciuria and hypocalcemia

44. Which of the following drugs would LEAST likely have "potassium-sparing" action?

- ☒ A. Amiloride
- B. Triamterene
- C. Spironolactone
- D. Hydrochlorothiazide - Spironolactone combination
- ☒ E. Furosemide

45. In a patient with bronchial asthma, the beneficial effect of cromolyn is due to its action on

- graphy*
- ☒ A. Mast cell membranes
 - B. Beta-1 adrenergic receptors
 - C. Beta-2 adrenergic receptors
 - D. Muscarinic receptors
 - E. Histamine (H₁) receptors

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

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

47. A 65-year-old patient enters the emergency room having taken a large overdose of aspirin. Treatment of the overdose should include administration of

- C*
- A. N-Acetylcysteine
 - B. Flumazenil
 - ☒ C. Sodium bicarbonate
 - D. Naloxone
 - E. Pralidoxime

48. Less tolerance develops to repeated administration of methadone than morphine. This is due to which one of the following?

- D*
- A. Methadone has a long duration of action with repeated dosing
 - B. Morphine is more potent than methadone
 - C. Morphine undergoes greater first-pass metabolism by the liver than methadone
 - ☒ D. Methadone is an antagonist at NMDA receptors
 - E. Methadone is an antagonist at mu opioid receptors

49. High doses of which one of the following drugs can cause hypertension and tachycardia?

- B*
- A. Butorphanol
 - ☒ B. Pentazocine
 - C. Naloxone
 - D. Methadone
 - E. Hydrocodone
- ↑HR*

back to
re-uptake

- ne-4 51
- A. Is a dopamine receptor antagonist
 - B. ~~Overdose~~ can be effectively treated with naloxone
 - C. ~~Onset of action~~ is the same following intranasal and intravenous administration
 - D. ~~Does not produce physical dependence~~
 - E. Overdose can result in fatal cardiac arrhythmias