ALL OF THE EXAMINATION QUESTIONS ARE TO BE SIGNED AND TURNED IN WITH THE ANSWER SHEETS. UNDER NO CONDITIONS ARE THE QUESTIONS TO BE RETAINED OR DUPLICATED.

DENTAL/OPTOMETRY GENERAL PATHOLOGY
EXAMINATION #3

November 16, 2000

Do NOT sign the Honor Pledge until after you have completed this examination.

HONOR PLEDGE:  "I pledge my honor as a member of the health professions that I have not given or received assistance, engaged in any other dishonorable conduct or have knowledge of anyone having done so during this examination process."

Sign: ______________________________
DENTAL/OPTOMETRY GENERAL PATHOLOGY
EXAMINATION 3

Directions: Each question or incomplete statement is followed by five suggested answer or completions. Select the one which is best in each case.

Photographic images will be shown for questions 1-10

1. A young man with AIDS developed a gradual deterioration of mental acuity and weakness, followed by focal neurologic deficits. There was concurrent pneumonia. An examination of the cerebrospinal fluid revealed a lymphocytic pleocytosis. These organisms were observed in a lung biopsy. The identity of this organism is:
   A. Cryptococcus
   B. Candida
   C. Blastomyces
   D. Coccidioides
   E. Sporothrix

2. Oral infections caused by the infectious agent shown are usually due to:
   A. transmission by arthropod vectors
   B. respiratory droplets from other infected persons
   C. contamination of a trauma or surgical site with endogenous organisms
   D. septicemic spread of organisms from infection in the lung
   E. acquisition from contaminated drinking water
3. All of the following are true statements about the organism shown and/or its infections EXCEPT:
A. It causes a primary lung infection that usually heals and calcifies
B. It is acquired by inhalation of soil contaminated with bird or bat droppings
C. Progressive, life-threatening disease is rare
D. Suppurative lesions localized in bone are common
E. Progressive cavitary disease can mimic tuberculosis

4. This infection shown in the slide is most commonly associated with which of the following underlying conditions?
A. Human Immunodeficiency Virus
B. uncontrolled diabetes mellitus
C. hepatic cirrhosis
D. hypogammaglobulinemia
E. thymic aplasia
5. The most common condition underlying this lesion is:
   A. septicemia
   B. chronic fibrotic lung disease
   C. atherosclerosis
   D. leg vein thrombosis
   E. systemic hypertension
6. Embolism from this lesion could lodge in each of the following **EXCEPT:**
   A. brain  
   B. lung  
   C. coronary artery  
   D. kidney  
   E. foot

7. Transmission of the infection illustrated in this slide can occur by means of:
   A. fleas  
   B. ticks  
   C. dogs  
   D. mosquitoes  
   E. spiders
8. The abnormality shown in this liver is most likely due to:
   A. right sided heart failure
   B. chronic alcoholism
   C. viral hepatitis
   D. diabetes mellitus
   E. glycogen storage disease

9. Choose the set of cerebrospinal fluid laboratory values that will most closely correspond to the disease shown in the photographs.

<table>
<thead>
<tr>
<th>Cells</th>
<th>Protein</th>
<th>Glucose</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Lymphocytes</td>
<td>Decreased</td>
<td>Increased</td>
</tr>
<tr>
<td>B. Lymphocytes</td>
<td>Increased</td>
<td>Decreased</td>
</tr>
<tr>
<td>C. Neutrophils</td>
<td>Increased</td>
<td>Decreased</td>
</tr>
<tr>
<td>D. Neutrophils</td>
<td>Decreased</td>
<td>Increased</td>
</tr>
<tr>
<td>E. Eosinophils</td>
<td>Increased</td>
<td>increased</td>
</tr>
</tbody>
</table>
10. The pathologic effects shown in this tissue are due to:
   A. endotoxin
   B. exotoxin
   C. complement
   D. antibody
   E. mast cells

11. A healthy 6-month-old white female infant is found dead in her bed by her parents. The parents take the child to a local emergency room. The parents are distraught when they learn that their child’s body will go to the medical examiner’s office, and they make clear that under no circumstances do they want an autopsy performed on their daughter. Which of the following findings would indicate that no autopsy is necessary?
   A. no external injuries
   B. cyanosis of the lips
   C. none, an autopsy is necessary
   D. a line of contusions on the right side of the head
   E. a history of neonatal jaundice that cleared a few days later

12. The feature that distinguishes a laceration from an incised wound is:
   A. tissue bridging the depth of the wound
   B. sharp, parallel edges
   C. the presence of contusions nearby
   D. the lack of any stab wounds on the body
   E. the presence of foreign material in the depth of the wound
13. A 72-year-old woman is found dead in her home after neighbors notice that smoke is coming from an open window. Examination of the body reveals extensive charring with loss of the feet and hands to fire. What internal finding might indicate that the decedent died before being engulfed in flames?
   A. severe hepatic cirrhosis
   B. markedly elevated monoxide bound to hemoglobin
   C. widened sulci suggestive of Alzheimer's disease
   D. severe coronary artery atherosclerosis
   E. a 2 cm adenocarcinoma of the right upper lobe of the lung

14. A 72-year-old widow is found dead in her house on her bedroom floor. The house is cluttered but clean. Because she had no physician, the body is brought to the medical examiner's office. Which of the following external findings requires additional clarification by the performance of an autopsy?
   A. an enlarged cardiac silhouette on xray
   B. an empty pill bottle and a note saying decedent had no reason to live any longer
   C. a fresh abrasion 1 inch in diameter on the left knee
   D. healing contusions on the shins
   E. that the front door was unlocked when the decedent was discovered

15. The identity of a decomposing body can be absolutely established by all of the following EXCEPT:
   A. fingerprints
   B. viewing of the remains by friends and relatives
   C. comparison of distinct bony features on antemortem radiographs
   D. the presence of metal plates or rods from a previous operation
   E. dental comparison
16. Which of the lines in the above graph corresponds to the serum component that indicates protective immunity against hepatitis B?
   A. 
   B. 
   C. 
   D. 
   E. 

17. Which type of wound is made by a blunt-edged weapon that causes irregular tearing of the skin?
   A. incised wound
   B. contusion
   C. laceration
   D. stab wound
   E. puncture wound

18. Mural thrombi are LEAST likely to occur in:
   A. aorta
   B. left atrium
   C. left ventricle
   D. pulmonary capillaries
   E. severe atherosclerotic plaque

19. Gram-negative bacteremia is most likely to be related to which one of the following?
   A. tonsillectomy
   B. incision and drainage of a skin abscess
   C. aspiration of pleural fluid
   D. instrumentation of the urinary tract with a Foley catheter
   E. cardiac catheterization to assess coronary artery disease

20. In the United States, which of the following represents the leading cause of death for the whole population?
   A. cancer
   B. cardiovascular disease
   C. chronic obstructive lung disease
   D. stroke
   E. trauma

21. Which of the following is correct concerning hepatitis vaccines?
   A. Hepatitis B vaccine is recommended for all healthcare workers
   B. Hepatitis C vaccine prevents liver cancer secondary to viral hepatitis
   C. Risk of acquiring hepatitis B after active immunization is approximately 10%
   D. A single dose of hepatitis B vaccine provides life-long immunity to all ssRNA hepatitis viruses.
E. Hepatitis A vaccine is recommended for all newborn infants

22. A 55-year old man with a history of tuberculosis began having recurrent hemoptysis, which became so severe that an operation was necessary. At surgery, a brownish mass of fungal hyphae was found within a cavitary lesion in the upper lobe of the left lung. The organism had septate hyphae branching at 45° angles and was not thermally dimorphic. The most likely organism involved is:
   A. Histoplasma
   B. Aspergillus
   C. Candida
   D. Cryptococcus
   E. Actinomyces

23. Fecal-oral transmission is predominant in which of the following diseases?
   A. hepatitis A
   B. hepatitis B
   C. hepatitis C
   D. hepatitis D
   E. hepatitis G

24. A 1-year old child develops swelling of the left side of the face following an episode of otitis media. Examination reveals a warm, fluctuant mass just lateral and inferior to the ear. What would most likely be revealed by aspiration of the lesion?
   A. pus
   B. giant cells with intranuclear inclusion
   C. granulomas with caseous necrosis
   D. malignant cells
   E. fibroblasts

25. Which is the chief complication of mumps in adult men?
   A. orchitis
   B. prostatitis
   C. glomerulonephritis
   D. chronic sialadenitis
   E. optic neuritis

26. The most reliable clinical indicator of left ventricular cardiac failure is:
   A. ascites
   B. venous congestion
   C. splenomegaly
   D. ankle edema
   E. chronic passive congestion of the lungs

27. Which of the following statements is correct about viral hepatitis??
   A. Hepatitis B is the most common cause of post-transfusion hepatitis
   B. Hepatitis D requires help from hepatitis B to infect humans
C. Hepatitis C is the most common cause of sporadic cases of hepatitis
D. Hepatitis B is a double stranded RNA virus
E. Chronic hepatitis A may lead to hepatocellular carcinoma

28. If nonfatal, a myocardial infarct would be expected to heal by which of the following mechanisms?
A. resolution
B. forming a calcified granuloma
C. regeneration of new myocardial tissue
D. forming a fluid filled cyst
E. forming a scar

29. A 76-year-old farmer was involved in an automobile accident resulting in multiple contusions, lacerations, and fractures necessitating hospitalization. Treatment consisted of suturing the lacerations and traction for the fractures. On the 4th day after admission the patient developed pneumonia. This should be considered a/an:
A. community acquired infection
B. nosocomial infection
C. superinfection
D. occupational infection
E. laboratory acquired infection

30. A construction worker suffers massive crush injuries from a fall, including multiple pelvic and femur fractures. On the 2nd hospital day, he developed mental status changes, petechial lesions, dyspnea and hypoxemia. He has most likely developed:
A. cardiogenic shock
B. fat embolism
C. acute pulmonary congestion
D. ischemic myocardial coagulation necrosis
E. decompression sickness

31. Double-walled organisms with broad based buds seen in a lung biopsy of a man from Huntsville, AL who complains of fever, cough and general malaise would be most consistent with which of the following mycoses?
A. blastomycosis
B. cryptococcosis
C. candidiasis
D. coccidioidomycosis
E. mucormycosis

32. The most likely source of the organisms in a patient with disseminated candidiasis is:
A. hospital personnel
B. hospital instruments
C. other infected patients
D. endogenous flora
A 21 year-old college student develops ocular pain, photophobia and increased lacrimation over a five-day period. Upon physical examination he is also noted to have preauricular lymphadenopathy, subconjunctival hemorrhages and bilateral conjunctivitis. Several other students who reside in the same college dormitory have had similar illnesses in the previous week. Which of the following microorganisms is the most likely cause?

A. orthomyxovirus
B. parainfluenza virus
C. respiratory syncytial virus
D. adenovirus
E. cytomegalovirus

Widespread lesions associated with focal necrosis and lymphocytic reaction without formation of abscesses or granulomas are characteristic of infections due to:

A. streptococci
B. staphylococci
C. fungi
D. viruses
E. prions

A pseudomembrane in the pharynx and upper respiratory tract is characteristic of infection with:

A. Corynebacterium diphtheriae
B. Mumps virus
C. Rubeola virus
D. Clostridium difficile
E. Streptococcus pneumoniae

The process of endosporulation can often be demonstrated in tissue sections infected with:

A. Histoplasma capsulatum
B. Coccidioides immitis
C. Blastomyces dermatitidis
D. Candida albicans
E. Sporothrix schenckii

Which statement is best applicable to disease processes caused by both Histoplasma and Blastomyces organisms?

A. Clinical manifestations can be directly ascribed to endotoxin production
B. The predominant route of infection is percutaneous inoculation
C. Person to person transmission is rare, if it occurs at all
D. These diseases are often diagnosed by skin testing
E. Both diseases occur almost exclusively in persons with HIV infection

The pathogenesis of tetanus and rabies is similar in that both:

A. are transmitted from animals to man
B. require a local lesion for invasion to occur
C. release toxins from the local lesion to injury neurons
D. produce tissue injury mediated by allergic response
E. require necrotic tissue for growth and survival of the organism

39. An 11 month-old girl became drowsy, mildly febrile, and dyspneic. On admission, she had signs of heart failure and a WBC of 4000 /µL. She died several hours after admission. The predominant finding at autopsy was a diffuse lymphocytic infiltrate of the myocardium without evidence of inclusion bodies. A likely diagnosis is:
A. measles
B. herpes simplex infection
C. Coxsackie virus infection
D. nocardiosis
E. cytomegalovirus infection

40. Infection with herpes viruses is usually life long because:
A. T-cell immunity fails to develop
B. Neutralizing antibodies to these viruses do not develop
C. The virus is protected from the host immune response in its latent form
D. After the initial infection, complete virions are not again formed
E. There is constant re-infection from the environment

41. Shock is commonly associated with all of the following conditions EXCEPT:
A. thrombotic cerebral infarction
B. Escherichia coli sepsis
C. cholera
D. myocardial infarction
E. widespread 3rd degree burns

42. The agent most commonly associated with diarrhea in infants and young children is:
A. herpes simplex
B. rotavirus
C. adenovirus
D. cytomegalovirus
E. Norwalk virus

43. A patient with extensive thermal burns is examined 3 hours after the event. He is semicomatose with a pulse of 130/minute and blood pressure of 50/30 mm Hg. This is consistent with:
A. septic shock
B. hypovolemic shock
C. cardiogenic shock
D. anaphylactic shock
E. neurogenic shock

44. The end product of the coagulation cascade is:
A. plasmin
B. fibrinogen
C. fibrin
D. prostacyclin
E. thromboxane

45. A 3-year-old boy from Mexico has minute white specks on the oral mucosa adjacent to his first molars. He appears to have a cold and his eyes are red and runny. There is a blotchy reddish rash behind his ears and on his face. He has had no childhood immunizations. He most likely has:
A. Rocky Mountain Spotted Fever
B. measles
C. chickenpox
D. Scarlet Fever
E. herpes simplex

46. Increased incidence of atherosclerosis has been correlated with all of the following associations EXCEPT:
A. hypertension
B. cigarette smoking
C. female gender
D. diabetes mellitus
E. use of oral contraceptives

47. Plasma cells arise from:
A. neutrophils
B. monocytes
C. basophils
D. lymphocytes
E. giant cells

48. Recurrent infection with yeasts, fungi or mycobacteria, and inability to confine viral infections are associated with a deficiency of:
A. humoral immunity
B. complement
C. Hageman factor
D. granulocytes
E. cellular immunity

49. Tissue injury induced by immune complexes is mediated principally by:
A. complement
B. histamine
C. leukotrienes
D. lymphokines
E. serotonin
50. A 35 year-old male IV drug abuser is undergoing a dental procedure. The dentist punctures the patient’s oral mucosa. The patient claims to be in excellent health. Assuming the patient is seropositive for both HIV and hepatitis B, what is the approximate likelihood of the dentist contracting hepatitis B or HIV from this needlestick?
A. 30% for HIV and 0.5% for hepatitis B
B. 85% for HIV and 60% for hepatitis B
C. 50% for each
D. 0.3% for HIV and 30% for hepatitis B
E. 0.3% for HIV and 0.1% for hepatitis B