

Sample Questions

American Board of Medical Microbiology

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SAMPLE QUESTIONS

The sample questions included in this examination guide are actual questions from previous examinations. They have been removed from the question pool. Do not judge the content as indicative of content in current questions, but use these sample questions as templates for the format.

1. Five cases of prosthetic valve endocarditis caused by *Staphylococcus epidermidis* are observed in one hospital. Of the following available methods, which is the most accurate for determining whether all five isolates were derived from a single source?
 - a. Serotyping
 - b. Restriction fragment length polymorphism analysis
 - c. Antimicrobial susceptibility testing
 - d. Bacteriophage typing

Question Tests – Bacteriology: Infection Control

2. Which of the following organisms is the most common cause of septicemia in patients with sickle cell disease?
 - a. *Salmonella enteritica*
 - b. *Streptococcus pneumoniae*
 - c. *Streptococcus agalactiae*
 - d. *Shigella sonnei*

Question Tests – Bacteriology: Infectious Disease and Pathogenesis

3. A 20-year-old man was generally healthy until his impacted wisdom tooth was removed by an oral surgeon. There was soreness and eruptions in the area through the skin where the tooth had been removed. The exudate draining through the skin was cultured aerobically, but the results were negative.

Which of the following is the most probable etiologic agent of this patient's condition?

- a. *Actinomyces israelii*
- b. *Histoplasma capsulatum*
- c. *Nocardia asteroides*
- d. *Actinomyces bovis*

Question Tests – Bacteriology: Infectious Disease and Pathogenesis

4. The highly infectious asexual conidia of *Coccidioides immitis* are called which of the following?
 - a. Arthroconidia
 - b. Blastoconidia
 - c. Chlamydoconidia
 - d. Sporangiospores

Question Tests – Mycology: Public Health

5. Which of the following specimens is used to diagnose infections with *Naegleria fowleri*?
 - a. Cerebrospinal fluid
 - b. Corneal scraping
 - c. Blood
 - d. Urine

Question Tests – Parasitology: Diagnostic Systems and Interpretation of Laboratory Data

6. An individual who has received all three doses of hepatitis B vaccine and who has never had hepatitis B virus (HBV) infection would be expected to have which of the following serologic marker(s)?
 - a. HBcAb
 - b. HBsAb
 - c. HBeAb
 - d. HBeAb and HBsAb

Question Tests – Virology: Diagnostic Systems and Interpretation of Laboratory Data

7. Which of the following is the arthropod vector of tularemia in North America?
 - a. *Dermacentor variabilis*
 - b. *Ornithodoros hermsi*
 - c. *Culex quinquefasciatus*
 - d. *Ixodes scapularis*

Question Tests – Bacteriology: Public Health

8. Which one of the following viral diseases has the shortest incubation period?
- Rubella
 - Influenza
 - Hepatitis A
 - Hepatitis B

Question Tests – Virology: Public Health

9. A 42-year-old wig manufacturer returned 5 days ago from Iran where he was inspecting goat herds for raw material. He had initially experienced only mild upper respiratory tract symptoms, but 2 days later was brought to the emergency room with fever, severe dyspnea, cyanosis, and tachycardia. Gram stain from the blood culture that signaled positive at 16 hours of incubation revealed large, encapsulated gram-positive rods. The organism was nonhemolytic on blood agar and nonmotile. What is the most probable identity of this organism?
- Clostridium tertium*
 - Bacillus anthracis*
 - Clostridium perfringens*
 - Bacillus subtilis*

Question Tests – Bacteriology: Diagnostic Systems and Interpretation of Laboratory Data

10. A 14-year-old boy from rural Maryland was seen in the emergency room with fever, fatigue, chills, headache, and a large annular lesion on his left thigh which the patient described as burning and itching. What is the most probable vector of this child's illness?
- Tick
 - Mosquito
 - Flea
 - Louse

Question Tests – Bacteriology: Infectious Disease

11. To safely work with etiologic agents classified as biosafety level 2 (BSL 2), BSL 1 laboratory practices, equipment, and facility recommendations are required. An additional recommendation includes which of the following?
- All procedures should be performed within a class II biological safety cabinet
 - Biological safety cabinet use can be limited to procedures where splashes or aerosols are possible
 - Negative air flow from the hallway to the laboratory
 - Self-closing double-door access into the laboratory

Question Tests – Universal

12. A patient who recently returned from a camping trip in Montana is hospitalized with high fever and prostration that recurs every 5 to 7 days. Loosely coiled spiral-shaped organisms 10 to 20 μm in length are noted in a Wright-stained smear of the patient's blood. Which of the following is the most probable etiologic agent?
- Leptospira interrogans*
 - Spirillum minor*
 - Borrelia hermsii*
 - Treponema pallidum*

Question Tests – Bacteriology: Diagnostic Systems and Interpretation of Laboratory Data

13. A previously normal, full-term infant developed bilateral conjunctivitis at 2 weeks of age. The conjunctivitis was followed by severe coughing, but the infant remained afebrile. When the infant was 4 weeks old, a chest X-ray showed bilateral symmetrical interstitial infiltrates. The white blood cell (WBC) count was $14,000/\text{mm}^3$ with 32% segmented neutrophils, 58% lymphocytes, 2% monocytes, and 4% eosinophils. Which of the following is the most probable infectious agent?
- Chlamydia trachomatis*
 - Streptococcus agalactiae*
 - Haemophilus influenzae*
 - Adenovirus

Question Tests – Bacteriology: Infectious Disease and Pathogenesis

14. A 51-year-old male, who was one year post liver transplant, suffered a puncture wound to his thumb while fishing in the Gulf of Mexico. Two days later, he experienced abrupt onset of pain, fever, and rapidly progressing skin lesions on both lower extremities. Blood cultures obtained at the time of admission demonstrated growth of gram-negative bacteria. The most probable etiologic agent is which of the following?

- a. *Photobacterium damsela*
- b. *Vibrio metschnikovii*
- c. *Vibrio vulnificus*
- d. *Vibrio parahaemolyticus*

Question Tests – Bacteriology: Infectious Disease and Pathogenesis

15. Two patients were admitted to a major medical center in the southwestern United States. The first patient presented with chronic sinusitis. Hematoxylin and eosin stains of debrided material revealed granulation tissue, chronic inflammation, and noninvasive, brownish septate hyphae. The second patient presented with leukemia and an erythematous cutaneous lesion. Biopsy of the lesion revealed septate hyphae, swollen hyphal elements, and hyphae with bizarre dilatations as exhibited in the photo. What is the most probable etiology for both patients?



Image courtesy of the Indian Journal of Pathology & Microbiology, <http://ijpmonline.org>

- a. *Aspergillus fumigatus*
- b. *Rhizopus oryzae*
- c. *Bipolaris spicifera*
- d. *Drechslera biseptata*

Question Tests – Mycology: Diagnostic Systems and Interpretation of Laboratory Data

16. A previously healthy, 24-year-old Mexican immigrant is brought to an emergency room in Los Angeles because of seizures. A CAT scan reveals a solitary calcified lesion, 2 cm in diameter, in the right cerebral hemisphere. What is the most probable diagnosis?

- a. Central nervous system coccidioidomycosis
- b. Cerebral cysticercosis
- c. Cerebral echinococcosis
- d. Extraintestinal amebiasis

Question Tests – Parasitology: Infectious Disease and Pathogenesis

17. A 2-year-old child is admitted to your hospital with kidney failure. She experienced a mild diarrheal illness and blood was noted in her stools prior to the onset of her disease. Several additional cases of bloody diarrhea and kidney failure in adolescents have been recognized in the community. Of the following, what agar screening medium should be included that might identify the pathogen from the stool specimens?

- a. MacConkey agar with sorbitol
- b. Thiosulfate citrate bile sucrose agar
- c. Hektoen enteric agar
- d. Cycloserine cefoxitin fructose agar

Question Tests – Bacteriology: Diagnostic Systems and Interpretation of Laboratory Data

18. A 16-year-old girl was admitted to a New Mexico hospital because of hypotension, cyanosis, high fever (39.9°C), and bilateral, nonfluctuant, inguinal, and axillary lymphadenopathy. The patient died the same day. Blood cultures obtained on admission were positive for bipolar-staining, short, gram-negative bacilli. What is the most probable etiologic agent?

- a. *Yersinia pestis*
- b. *Brucella abortus*
- c. *Klebsiella rhinoscleromatis*
- d. *Francisella tularensis*

Question Tests – Bacteriology: Diagnostic Systems and Interpretation of Laboratory Data

19. The most common cause of acute infantile diarrhea has been dramatically reduced secondary to vaccination to which of the following viruses?
- Enteroviruses
 - Rotaviruses
 - Noroviruses
 - Enteric adenoviruses

Question Tests – Virology: Diagnostic Systems and Interpretation of Laboratory Data

20. Several laboratory tests were researched for their usefulness in evaluating suspected histoplasmosis in patients who reside in an area where this disease is endemic. If the prevalence of histoplasmosis is 25%, which of the following sensitivity and specificity combinations would you choose as the most useful confirmatory test for diagnosing the disease?
- Sensitivity of 50%, specificity of 98%
 - Sensitivity of 90%, specificity of 80%
 - Sensitivity of 92%, specificity of 70%
 - Sensitivity of 99%, specificity of 90%

Question Tests – Universal

21. A 16-year-old male from Los Angeles with end-stage renal disease is admitted to the hospital for evaluation of a febrile episode. Laboratory studies showed that the boy was hypogammaglobulinemic. A blood culture obtained on admission was positive for faintly staining, curved, gram-negative rods from the aerobic bottle only. An oxidase-positive, catalase-negative, motile, helical, gram-negative rod was recovered on chocolate agar after 3 days of incubation at both 37°C and 42°C. This organism did not grow on *Campylobacter* blood agar. What is the most probable etiologic agent?
- Campylobacter coli*
 - Campylobacter upsaliensis*
 - Helicobacter pylori*
 - Vibrio metschnikovii*

Question Tests – Bacteriology: Infectious Disease and Pathogenesis

22. According to the Centers for Disease Control and Prevention *Infection Control Guidelines*, routine microbiologic sampling is indicated for which of the following?
- Respiratory therapy equipment
 - Dialysis fluid
 - Sterile disposable equipment
 - Operating room surfaces

Question Tests – Bacteriology: Infection Control

23. Which of the following are associated with *Histoplasma capsulatum*?
- Tuberculate macroconidia
 - Spherules
 - Sclerotic bodies
 - Arthroconidia

Question Tests – Mycology: Diagnostic Systems and Interpretation of Laboratory Data

24. Which medium is useful for the isolation of *Malassezia furfur*?
- Charcoal yeast extract agar
 - Egg yolk agar
 - Brain heart infusion agar containing glycerol
 - Sheep blood agar with olive oil overlay

Question Tests – Mycology: Diagnostic Systems and Interpretation of Laboratory Data

25. A 6 month old child has a respiratory illness with high fever for 5 days followed by a rash of small, pink, flat bumps on the trunk and extremities. The physician states the diagnosis is likely roseola infantum. Which of the following viruses is closely associated with this exanthem?
- Parvovirus B19
 - Human herpesvirus 6
 - Rubella virus
 - Rubeola virus

Question Tests – Virology: Infectious Disease and Pathogenesis

26. What is the most appropriate test to diagnose West Nile virus infection in a patient with encephalitis?
- Virus culture of buffy coat
 - Acute and convalescent serologic testing on serum
 - IgM serologic testing on cerebrospinal fluid
 - PCR on cerebrospinal fluid

Question Tests – Virology: Diagnostic Systems and Interpretation of Laboratory Data

27. Of the following viruses, which is the most common nosocomial pathogen transmitted in pediatric patients?
- Respiratory syncytial virus
 - Adenovirus
 - Herpes simplex virus
 - Cytomegalovirus

Question Tests – Virology: Infection Control

28. A florist presents with a lymphocutaneous infection of the right hand and forearm. What is the most probable fungal etiologic agent?
- Cladosporium carrionii*
 - Phialophora verrucosa*
 - Sporothrix schenckii*
 - Trichosporon cutaneum*

Question Tests – Mycology: Infectious Disease and Pathogenesis

29. Which of the following, if ingested raw or poorly cooked, can be the source of *Taenia saginata* infections?
- Pork
 - Beef
 - Lamb
 - Fish

Question Tests – Parasitology: Public Health

30. A patient who regularly cleans fish tanks had an organism recovered from an infected finger wound that was slowly progressive in spite of topical antibiotic treatment. The organism was isolated on day 14, was acid fast positive, grew optimally at 30°C on Middlebrook 7H11 medium, and formed deep yellow pigment when exposed to light. What is the most probable identification of this organism?

- Mycobacterium avium* Complex
- Mycobacterium haemophilum*
- Mycobacterium chelonae*
- Mycobacterium marinum*

Question Tests – Bacteriology: Diagnostic Systems and Interpretation of Laboratory Data

ANSWERS

- | | | | | |
|------|-------|-------|-------|-------|
| 1. B | 8. B | 15. C | 22. B | 29. B |
| 2. B | 9. B | 16. B | 23. A | 30. D |
| 3. A | 10. A | 17. A | 24. D | |
| 4. A | 11. B | 18. A | 25. B | |
| 5. A | 12. C | 19. B | 26. C | |
| 6. B | 13. A | 20. A | 27. A | |
| 7. A | 14. C | 21. B | 28. C | |