

CHOOSE THE SINGLE BEST ANSWER FOR QUESTIONS 1 - 60.

1. A 28 year old prostitute is complaining of a whitish vaginal discharge. Vaginal examination reveals a mucopurulent discharge coming from her cervix but she is otherwise asymptomatic. Gram stain of the discharge will most likely show:
 - A. Gram positive diplococci
 - B. Gram negative diplococci
 - C. Gram negative rods
 - D. Yeast

2. Which of the following organisms is best characterized by the following mechanism:

"Organism is ingested by intestinal mucosal cells, replicates in the cell cytoplasm, invades adjacent cells eventually resulting in shallow ulcers. PMNs, red blood cells, and mucus occur in the stool."

 - A. *Salmonella*
 - B. *Shigella*
 - C. *Campylobacter*
 - D. *Yersinia*
 - E. *Giardia*

3. The cellular tropism of HIV:
 - A. Involves only CD4+ T lymphocytes.
 - B. Is dependent upon the matrix protein.
 - C. Involves only CD4+ lymphocytes and monocytes/macrophages.
 - D. Is dependent upon the capsid protein.
 - E. Involves CD4+ T lymphocytes, monocytes/macrophages, and neural cells.

4. A 20-year-old woman complains of vaginal itching and a yellow-white discharge. She is just finishing a course of antibiotic therapy for an ear infection, and is currently using oral contraceptives. The organism most likely to be the cause of her vaginal discharge is:
- A. *Neisseria gonorrhoeae*
 - B. *Chlamydia trachomatis*
 - C. *Treponema pallidum*
 - D. *Ureaplasma urealyticum*
 - E. *Candida albicans*
5. The infectious stage of *Entamoeba histolytica* is:
- A. Cyst
 - B. Trophozoite
 - C. Oocyst
 - D. Merozoite
 - E. Sporozoite
6. A 30 year old woman is admitted in septic shock with a high fever. She was ill last week with a low grade fever and mentioned to a friend she had an aching sensation in her left flank. Prior to beginning therapy, you elect a workup to determine the precipitating cause of her illness.

Which statement regarding this illness is CORRECT?

- A. Blood cultures are frequently positive in this condition.
- B. Urine Gram stain will probably be negative since she has no urinary tract symptoms.
- C. Serologic testing is necessary to confirm the diagnosis.
- D. Gram positive bacteria are not a consideration.

7. Hepatitis C virus:
- A. Is a member of the Hepadnaviridae family.
 - B. Is transmitted fecal-orally.
 - C. Is the leading cause of post-transfusion hepatitis.
 - D. Has a genome consisting of a DNA molecule.
 - E. Only causes acute infections.
8. The most common cause of uncomplicated community acquired urinary tract infections is:
- A. *Staphylococcus epidermidis*.
 - B. *Escherichia coli*.
 - C. *Proteus vulgaris*.
 - D. *Pseudomonas aeruginosa*
 - E. *Klebsiella pneumoniae*
9. A premature baby (34-week gestation) is born with microcephaly and hepatosplenomegaly. Intracranial calcification are demonstrated on CT scan of the head. The most likely diagnosis is congenital infection caused by:
- A. Rubella virus
 - B. *Treponema pallidum*
 - C. *Toxoplasma gondii*
 - D. Group B *Streptococcus*
 - E. Herpes simplex virus

10. A patient is suspected to be in secondary stage syphilis. Darkfield microscopy of fluid from a genital lesion does not reveal treponemes. The next course of action would be to:
- A. Rule out a syphilis infection since the microscopy test is negative
 - B. Repeat the darkfield microscopy test with additional lesion fluid
 - C. Request a non-treponemal cardiolipin antigen test (VDRL or RPR)
 - D. Assume the patient has cleared the infection and needs no further treatment
11. Which of the following parasitic intestinal organisms is acquired by ingestion of oocysts which release infectious sporozoites in the small intestine that invade the epithelial cells. The disease is self-limiting in immunocompetent individuals but can be chronic in immunocompromised individuals?
- A. *Ascaris lumbricoides*
 - B. *Cryptosporidium parvum*
 - C. *Entamoeba coli*
 - D. *Giardia lamblia*
 - E. *Taenia solium*
12. A 35 year old man has just returned from a vacation in Mexico. He is complaining of fever, malaise, headache and myalgia as well as a dry cough. Several days before the onset of these symptoms he experienced some nausea and vomiting, but now is constipated. On examination, his temperature is 101.4°F, pulse 72. He has a faint erythematous macular eruption.
- Which of the following would be most likely to confirm the diagnosis at this point in his illness?
- A. Blood culture
 - B. Urine culture
 - C. Sputum culture
 - D. Serologic studies
 - E. Bone marrow culture

13. Which of the following is NOT a characteristic of rotaviruses?
- A. Normally released by cell lysis
 - B. Segmented single-stranded RNA for a genome
 - C. Nonenveloped
 - D. RNA dependent RNA polymerase is present in the virion.
 - E. Icosahedral symmetry.
14. Which of the following bacteria cause a fever accompanying their intestinal infection?
- A. *Bacillus cereus*
 - B. *Vibrio cholerae*
 - C. *Clostridium perfringens*
 - D. *Campylobacter jejuni*
 - E. *Helicobacter pylori*
15. A 5 year old male presents with a 3 day history of rash. The rash consists of papules, vesicles and pustules. New lesions keep appearing. He is otherwise healthy. A few children from his class were absent 2 weeks earlier. What is the causative agent?
- A. *Herpes simplex* type 1
 - B. *Neisseria meningitidis*
 - C. *Streptococcus pyogenes*
 - D. Varicella-Zoster virus
 - E. Coxsackie virus

16. Which of the following result from HIV-induced loss of CD4+ lymphocytes?
- A. Increased susceptibility to nosocomial pathogens
 - B. Increased susceptibility to Gram negative bacteria such as *Pseudomonas*
 - C. Increased susceptibility to intracellular pathogens
 - D. Increased frequency of leukemia
17. *Neisseria gonorrhoeae*:
- A. Are normal inhabitants of the respiratory and/or genital flora.
 - B. Can cause infections which confer lifelong immunity to reinfection
 - C. Never causes disseminated infections
 - D. Can cause infections that lead to infertility in women
 - E. Forms spores that can survive indefinitely outside of host cells
18. A 22 year old homosexual male is admitted because of anorexia, nausea and vomiting of several days duration. He denies drug and alcohol use. He does smoke, but indicates he seems to have lost his taste for cigarettes lately. On exam, his temperature is 101.3°F, and he has yellow eyes. There is some vague tenderness in the right upper quadrant. The remainder of the exam is negative. The most likely cause of his illness is:
- A. Hepatitis B
 - B. Hepatitis C
 - C. Hepatitis D
 - D. Hepatitis E

19. Acute gastroenteritis:
- A. Is caused by viruses in less than 10% of all cases.
 - B. Is caused by members of the Herpesvirus family.
 - C. Is a major health problem only in developing countries.
 - D. Can be caused by viruses, bacteria, and parasites.
 - E. Is caused by a single large family of viruses.
20. Which of the following organisms best fits the characteristics: anaerobic, Gram negative bacillus which is frequently involved in peritonitis and intraperitoneal abscesses?
- A. *Clostridium perfringens*
 - B. *Bacteroides fragilis*
 - C. *Actinomyces israelii*
 - D. *Peptostreptococcus anaerobius*
21. Patients with which of the following causes of diarrhea should usually be treated with antibiotics?
- A. Enterohemorrhagic *E. coli*
 - B. *Salmonella enterica*
 - C. Rotavirus
 - D. *Vibrio cholera*
 - E. *Clostridium perfringens*

22. A 71 year old woman is admitted to the hospital with fever and severe abdominal pain. On examination, her temperature is 104.2°F and her abdomen is rigid. You suspect bowel perforation. She should be treated with antibiotics which are active against:
- A. Aerobic and anaerobic Gram-negative bacilli
 - B. Aerobic Gram-negative bacilli and Gram-positive cocci.
 - C. *Candida* and anaerobes.
 - D. Staphylococci and Gram negative bacilli
 - E. Anaerobes and aerobic Gram-positive cocci
23. The infection most likely to cause congenital cardiac defect (such as patent ductus arteriosus) is:
- A. Cytomegalovirus
 - B. Syphilis
 - C. Rubella
 - D. Toxoplasmosis
 - E. HIV
24. Norwalk virus:
- A. Is a member of the Orthomyxoviridae family.
 - B. Is transmitted parenterally.
 - C. Is a small, spherical particle.
 - D. Possesses a double-stranded RNA for its genome.
 - E. Infects only children under the age of 5 yr.

25. Infections with which of the following organisms results in invasion of the terminal ileum, necrosis of Peyer's patches, and inflammation of mesenteric lymph nodes (mimics acute appendicitis)?
- A. *Vibrio parahemolyticus*
 - B. *Yersinia enterocolitica*
 - C. *Clostridium perfringens*
 - D. *Shigella dysenteriae*
26. Hepatitis D infection:
- A. Causes hepatitis in patients already immune to other forms of hepatitis.
 - B. Causes fulminant hepatitis in patients co-infected with Hepatitis A.
 - C. Causes fulminant hepatitis in patients co-infected with Hepatitis C.
 - D. Can be prevented by Hepatitis A vaccine.
 - E. Can be prevented by Hepatitis B vaccine.
27. Which of the following organisms produces neuraminidase, exoenzyme S, exotoxin A, and pyocyanin and poverdin?
- A. *Escherichia coli*
 - B. *Burkholderia cepacia*
 - C. *Pseudomonas aeruginosa*
 - D. *Bacteroides fragilis*
 - E. *Klebsiella pneumoniae*

28. In the diagnosis of syphilis, all of the statements below are TRUE EXCEPT:
- A. All untreated patients progress to the tertiary stage of the disease
 - B. Primary lesions have bacteria that may be visualized by microscopy
 - C. Secondary stage symptoms may include fever, sore throat, and rash or skin lesions
 - D. The disease is acquired by contact with an individual with an active primary or secondary lesion
 - E. The bacteria responsible for syphilis are difficult to culture
29. Quantitative measures of plasma HIV RNA levels are useful for which of the following?
- A. Determining the duration of HIV infection in an individual
 - B. Estimating an individual's rate of disease progression and future survival
 - C. Determining the need for an individual to use safer sex practices to reduce transmission risk
 - D. Determining the need for prophylactic treatments to reduce the risk of opportunistic infections
30. The best term to describe the condition: "infection of the large intestine characterized by inflammation with blood and pus in the feces, usually small volume of feces, and frequently accompanied by symptoms of pain, fever, and abdominal cramps" is:
- A. Gastroenteritis
 - B. Diarrhea
 - C. Dysentery
 - D. Enterocolitis

31. Which of the following statements regarding HIV is NOT TRUE?
- A. Its genome is most closely related to HTLV-I.
 - B. Its genome is most closely related to an SIV.
 - C. Its genome is related to HIV-2.
 - D. It is a member of the Retroviridae family.
 - E. Its genome is related to FIV.
32. Which of the following pairs of bacterial intestinal pathogens exclusively infect humans?
- A. *Salmonella* and *Shigella*
 - B. *Salmonella* and *Campylobacter*
 - C. *Campylobacter* and *Vibrio cholerae*
 - D. *Shigella* and *Vibrio cholerae*
33. Which of the following characteristics is NOT applicable to Hepatitis B virus?
- A. Diagnosed by the presence of HBsAg in the blood.
 - B. Cannot be vaccinated against.
 - C. Virion consists of multiple types of particles.
 - D. Polymerase has reverse transcriptase activity.
 - E. Genome is a circular, partially duplexed DNA molecule.

34. Which of the following types of pathogenic *Escherichia coli* can be identified in a standard clinical laboratory?
- A. Enterohemorrhagic *E. coli*
 - B. Enteroinvasive *E. coli*
 - C. Enterotoxigenic *E. coli*
 - D. Enteropathogenic *E. coli*
 - E. Enteroadherent *E. coli*
35. A 16 year old female presents with fever, hypotension, erythematous rash and hepatosplenomegaly. What important information in her history will aid in making a diagnosis?
- A. Use of drugs and/or alcohol
 - B. Sexual activity
 - C. Last menstrual period/use of tampons
 - D. Exposure to any sick contacts
 - E. Travel
36. Which of the following organisms does NOT produce an enterotoxin that causes gastrointestinal illness?
- A. *Helicobacter pylori*
 - B. *Bacillus cereus*
 - C. *Staphylococcus aureus*
 - D. *Clostridium perfringens*
37. Hepatitis D virus:
- A. Has a DNA genome.
 - B. Has one of the largest known genomes.
 - C. Is detected in humans by antibodies produced against its polymerase.
 - D. Is unable to replicate independent of another virus.
 - E. Is unusual because it encodes several different polymerases involved in its replication.

38. Pseudomembranous lesions of the colon are associated with which of the following organisms?
- A. *Staphylococcus aureus*
 - B. *Corynebacterium diphtheriae*
 - C. *Clostridium difficile*
 - D. EIEC
 - E. *Clostridium perfringens*
39. *Chlamydia trachomatis*:
- A. Is an extracellular bacterial pathogen that is part of the normal genital mucosal flora
 - B. Grows as a yeast under most conditions, but hyphal forms are responsible for tissue invasion
 - C. Leads to genital infections in women that are always symptomatic
 - D. Can produce infections that persist for long periods of time
 - E. Can survive in cyst form
40. The role of the HIV Rev protein is to:
- A. Encapsidate the viral genome into virus particles.
 - B. Regulate viral RNA transport from the nucleus.
 - C. Transactivate viral transcription.
 - D. Downregulate the CD4 and MHC class I molecules.
 - E. Promote mutations of the viral genome.

41. Which of the following virulence factors are crucial to establishing and maintaining a urinary tract infection?
- A. Adhesins
 - B. Toxins
 - C. Iron-scavenging molecules
 - D. Anti-phagocytic capsules
 - E. Proteases
42. The genome of a Retrovirus is:
- A. Double-stranded DNA.
 - B. Single-stranded RNA of positive-strandedness or polarity.
 - C. Single-stranded RNA of negative-strandedness or polarity.
 - D. Segmented into 5 RNA molecules.
 - E. Copied directly to a positive-strand RNA after infection of a cell.
43. Which of the following organisms causes food poisoning with vomiting within 6 hours of ingesting the infected food?
- A. *Clostridium perfringens*
 - B. *Salmonella enterica*
 - C. *Staphylococcus aureus*
 - D. *Campylobacter jejuni*
 - E. *Shigella flexneri*
44. All of the following statements regarding HTLV-I are true EXCEPT:
- A. Causes immunodeficiencies.
 - B. Is endemic only to certain areas of the world.
 - C. Causes adult T cell leukemias.
 - D. Causes tropical spastic paraparesis.
 - E. Has a complex genome.

45. The most common focus of infection of group B Streptococci in the newborn is:
- A. Skin
 - B. Lungs
 - C. Meninges
 - D. Urinary tract
 - E. Bone
46. The parasitic agent which causes non-inflammatory diarrhea and produces symptoms of acute onset diarrhea, abdominal cramps, bloating, and flatulence is:
- A. *Entamoeba histolytica*
 - B. *Giardia lamblia*
 - C. *Enterobius vermicularis*
 - D. *Balantidium coli*
47. All of the following statements explain why urinary tract infections are much more prevalent in females compared to males EXCEPT:
- A. The distance between the urethra and colon is shorter in women than in men.
 - B. The female urethra is shorter than the male urethra.
 - C. The female genitourinary tract is more heavily colonized with normal flora than is the male.
 - D. Prostate fluid in males has antibacterial properties
 - E. Uropathogen colonization rates increase with estrogen levels in females.

48. A thirteen-year-old sexually-active female complains of vaginal discharge and urinary frequency. A cervical swab culture reveals a Gram-negative diplococcus which is oxidase positive. The organism cultured from the swab is most likely:
- A. *Trichomonas vaginalis*
 - B. *Neisseria gonorrhoeae*
 - C. *Chlamydia trachomatis*
 - D. *Treponema pallidum*
 - E. *Escherichia coli*
49. A 22 year old man presents to your office with 3 days of fever, a macular erythematous (flat and red) rash on the face and trunk, oral ulcerations, and diffuse lymphadenopathy. You ascertain that he is sexually active with both men and women, drinks wine or beer on weekends but does not smoke, and was once treated for gonorrhea. Which of the following tests is likely to provide a specific diagnosis?
- A. HIV antibody test by ELISA
 - B. HIV antibody test sequence of ELISA followed by Western Blot
 - C. HIV nucleic acid detection in the plasma
 - D. Mononucleosis Spot Test
50. Retroviral reverse transcriptase:
- A. Is synthesized from a spliced mRNA.
 - B. Is initially synthesized as a Pol-Env polyprotein.
 - C. Is not packaged into virions.
 - D. Does not require a primer molecule for its polymerase activity.
 - E. Can use RNA or DNA as a template.

51. Which patient has a higher risk of complications if infected with Parvovirus B19?
- A. Healthy five year old
 - B. Ten year old with cystic fibrosis
 - C. Eight year old with sickle cell anemia
 - D. Twelve year old in renal failure
 - E. Four year old with chicken pox

MATCHING ITEMS

In each of the following groups there are two numbered lists. Mark on the answer sheet in the line corresponding to each question number in the lower list (52-60) the letter of the related item of the upper list. In every instance there is an answer. Each alternative may be used once, more than once or not at all.

DIRECTIONS: Select the option (A-E below) which best fits the descriptions numbered 52-54.

- A. *Streptococcus agalactiae*
- B. *Escherichia coli*
- C. *Listeria monocytogenes*
- D. *Toxoplasma gondii*
- E. Poliomyelitis virus

- 52. Can exist as cysts that survive for long periods in the environment.
- 53. Food-borne bacterium that can be transmitted to the developing fetus.
- 54. Produces a capsule with similarities to embryonic neural adhesion molecules.

DIRECTIONS: Select the option (A-D below) which best fits the descriptions numbered 55-57.

- A. Hepatitis A
- B. Hepatitis B
- C. Hepatitis C
- D. Hepatitis E

- 55. Causes chronic infection in 70% of cases
- 56. Causes acute self-limited disease, common in the US
- 57. Is a DNA virus

DIRECTIONS: Match the pathogen (A-E below) with the genital clinical syndrome numbered 58-60.

- A. Painful enlarged inguinal nodes, Bubo and purulent drainage.
 - B. Painful genital ulceration, fever, inguinal lymphadenopathy
 - C. Soft chancre with ulceration
 - D. Painless indurated lesion
 - E. Often asymptomatic, lesions are few in number, no adenopathy
58. LGV (*Chlamydia trachomatis* strains L1-3)
59. *Haemophilus ducreyi* (chancroid)
60. *Treponema pallidum*