1. The aerobic gram-negative bacilli of medical importance encompass the genera *Francisella* and:
   
   A. *Pseudomonas*
   B. *Bordetella*
   C. *Legionella*
   D. *Brucella*
   E. all of these

2. Bubonic ___ is caused by *Yersinia pestis*, a small gram-___ coccobacillus. This bacterium is believed to have been introduced to the U.S. in 1906 by way of San Francisco aboard ships carrying infested rats and, aided by ___, the bacteria spread to local rats. Easterly spread to native rodents beyond the urban limits appear to coincide with the massive earthquake devastations of that era.
   
   A. zoonosis, positive, ticks
   B. plague, negative, fleas

3. *Pseudomonas aeruginosa* is not:
   
   A. a strict pathogen
   B. wherever soil and dust can go
   C. a medical devices contaminant
   D. an occasional human enteric
   E. soap, detergent, dessication resistant

4. Bubonic plague is transmitted by the flea. Which step ensures infection of the next victim?
   
   A. flea must feed on blood for nutrients to complete its reproductive cycle
   B. when drawing infected blood, the flea is colonized by the plague bacillus
   C. bacterial multiplication first occurs in the gut, spreading to the flea's esophagus
   D. able to bite but unable to swallow, the flea becomes desperately ravenous
   E. futile biting is accompanied by regurgitation of bacilli

5. *Bordetella pertussis* employs two potent virulence factors: 1) a bacterial ligand that binds to ___ of respiratory epithelial cells, and 2) a toxin that loosens and destroys ___ cells. While barrier breakdown permits invasion and spread, toxic disintegration of ciliary cells impairs the ___ mechanism for clearing debris-laden mucus from airways.
   
   A. receptors, ciliated, "sweeping"
   B. basement membrane, mucus, peristalsis
6. Shigellosis treatment calls for body ___ restoration, and antimicrobial medication. Especially since no ___ is available, scrupulous care in food preparation, storage, and service are needed to avoid fecal contamination. Although shigella exotoxin is heat ___ and denatured with sufficient cooking, endotoxin may persist.
   A. muscle, immunity, stable
   B. fluid, vaccine, labile

7. Pertussis is not:
   A. called whooping cough
   B. caused by *Bordetella pertussis*
   C. potentially life-threatening
   D. contagious
   E. a childhood affliction

8. In tube and petri plate tests, growth media are supplied with various substrates to determine whether a species can or cannot metabolize the nutrient. After incubation the results are inspected for ___, a change from the original is ascribed to ___ change and is usually considered positive. The pH shift is, in turn, due to the release of basic or ___ product.
   A. growth, mutagenic, alkaline
   B. coloration, pH, acidic

9. *Haemophilus* cells are small, gram-negative, ___ rods, highly ___ to dessication, temperature extremes, and disinfectants.
   A. pseudo-, resistant
   B. pleomorphic, vulnerable

10. The somatic cell wall antigen of enteric bacteria is the:
    A. O antigen
    B. K antigen
    C. flagella antigen
    D. H antigen
    E. fimbral antigen

11. The group of microbes most frequently responsible for diarrheal illnesses or nosocomial infections is the:
    A. viruses
    B. enteric bacteria
    C. helminths
    D. fungi, yeasts
    E. protozoa
12. The Enterobacteriaceae do not manifest:
A. saprobic, enteric adaptation
B. aerobic, facultative metabolism
C. gram-negative, rod shapes
D. diarrhea provocation
E. endosporulation, cysts

13. Although undulant fever is neither ___, nor ___, antimicrobics like tetracycline, rifampin, and streptomycin are indicated. Preventative measures entail eliminating infected animals and ___ of milk. An animal vaccine is available but no safe human version has been developed yet.
A. lethal, contagious, pasteurization
B. noncommunicable, zoonotic, sterilize

14. Which of the following diseases is not etiologically related to the rest?
A. Bang disease
B. undulant fever
C. pertussis
D. Malta fever
E. brucellosis

15. The exclusive hosts for *S. typhi* are ___. Despite sanitation and antimicrobial controls typhoid is perpetuated by ___ carriers who inadvertently harbor and disperse bacteria. Sequestered in the gallbladder, bacilli periodically escape along with ___ secretions into the intestines.
A. apes, latent, gall stones
B. humans, asymptomatic, bile

16. The estimated infectious dose of tularemia is quite ___, only ___ viable cells, a number easily borne in ___ droplets.
A. low, 10 to 50, aerosol
B. high, 100, body fluid

17. The regular pathogens among the gram-negative enteric bacilli opportunists is:
A. *Salmonella/Shigella*
B. *Morganella/Providencia*
C. *Serratia/Citrobacter*
D. *Proteus/Escherichia*
E. *Klebsiella/Enterobacter*
18. Coliforms differ from noncoliforms chiefly on the basis of virulence, habitat and:

A. gram-stain
B. lactose fermentation
C. nitrate & oxidase positive
D. commensalism
E. glucose fermentation

19. Infants are at greater risk to E. coli diarrhea than adults because of undeveloped immunity and sensitivity to severe water and __ loss, the immediate cause of death. Under unsanitary conditions, breast feeding is safer than by bottle since a source of contamination lies in the __ of nursing formulas from dried milk.

A. volume, storage
B. electrolyte, preparation

20. Which of the following is/are the agent(s) of bacillary dysentery?

A. Sh. dysenteriae
B. Sh. flexneri
C. Sh boydii
D. Sh. Sonnei
E. all of these

21. Pseudomonas nosocomial complications are basically associated with:

A. burns, cancer, cystic fibrosis
B. pneumonia, abscesses
C. septicemia, meningitis
D. immunocompromised hosts
E. urinary tract infections

22. What happens in the septicemic phase of plague that causes skin to darken?

A. the eruption of bubos and spilling of bacilli
B. a massive inflammatory mechanism is triggered
C. profuse virulence factors are liberated
D. disseminated intravascular coagulation, subcutaneous hemorrhage, purpura occur
E. circulatory collapse leads to necrosis and gangrene

23. Although Haemophilus influenza is __ an etiologic agent for flu as was originally thought, it is responsible for acute bacterial __. Prompt diagnosis and aggressive treatment are indicated to combat fever, vomiting, stiff neck, respiratory distress, neurological impairment, and death. Subunit __ vaccine that may be combined with DPT is available for children.

A. not, meningitis, anti-capsule
B. alternatively, inhibition, flagella
24. Which gram-negative, strictly aerobic, saprobic microbe was a bacterium without a disease, much less a respectable name, until a 1976 fraternal convention?

A. *Bordetella*
B. *Legionella*
C. *Brucella*
D. *Pseudomonas*
E. *Francisella*

25. The coliform count is an indirect indicator of human fecal contamination that is not dependent upon:

A. finding normal microflora
B. survival in environment
C. access to food and drink
D. abundance in gut
E. isolating true pathogens