

Answer all questions. Select ONE answer that is best for each question:

1. The rigidity and shape of the bacterial cell is DUE TO:
 - a. cell membrane
 - b. peptidoglycan layer
 - c. the lipopolysaccharide
 - d. the teichoic acid layer
 - e. none of the above
2. Which of the following functions in mating and adhesion to host cells?
 - a. pili
 - b. capsules
 - c. flagella
 - d. plasmids
 - e. outer membrane
3. Which of the following is NOT true regarding spores?
 - a. they can allow bacteria to exist in suspended animation for centuries
 - b. it contains a high concentration of calcium bound to dipicolinic acid
 - c. it contains a complete copy of the chromosomes
 - d. it contains high concentrations of the essential proteins and ribosomes
 - e. it protects the DNA from intense heat, radiation
4. Some G+, but never G- bacteria form spores. These include members of the genera:
 - a. *Bacillus* and *Clostridium*
 - b. *Staphylococcus* and *Streptococcus*
 - c. *Bacillus* and *Streptococcus*
 - d. *Clostridium* and *Staphylococcus*
 - e. *Bacillus* and *Staphylococcus*
5. Misuse of antibiotics selects for resistance mutants is:
 - a. use of antibiotics in animal feed
 - b. failure to complete the prescribed regimen
 - c. using someone else's leftover prescription
 - d. all the above
6. Which of the following are considered as goals of microbiology laboratory?
 - a. to identify the presence of pathogenic organisms
 - b. to predict response to antimicrobial therapy
 - c. to assist in epidemiological investigations
 - d. all the above
7. Increasing antibiotic resistance will lead to:
 - a. increase Morbidity
 - b. increase Mortality
 - c. increase financial Costs
 - d. longer Hospitalization
 - e. all the above
8. Evidence for a potential pathogen being clinical significant is:
 - a. fits with clinical picture
 - b. evidence of immune response to pathogen
 - c. isolation of the causative agent
 - d. isolated in pure culture only
 - e. all the above
9. None of the following act as inhibitors of nucleic acid synthesis in bacteria EXCEPT:
 - a. quinolones
 - b. polymyxins
 - c. tetracyclines
 - d. fusidic acid

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10. Specificity is identified as the fraction of those without the disease correctly identified as negative by the test
- TRUE
 - FLASE
11. Which of the following can contains genes to make organisms antibiotic resistant?
- pili
 - capsule
 - flagella
 - plasmid
 - outer membrane
12. The type of heat which kills bacteria by denature of their protein materials is called:
- dry heat
 - moist heat
 - hot air
 - direct heat
13. What is the gene location for the tetanus toxin?
- plasmid
 - chromosomal
 - phage
 - all the above
14. Which of the following groups of people is most at risk for contracting *T. pallidum*?
- pregnant mothers
 - cystic fibrosis patients
 - sexually active patients
 - elderly patients
15. *Rickettsia*, an aerobic Gram-negative rod, is which of the following?
- extracellular pathogen
 - obligate intracellular parasite
 - obligate extracellular parasite
 - facultative intracellular parasite
16. Cutaneous Dermatophytes include all of the following genera EXCEPT one:
- trichophyton
 - microsporum
 - epidermophyton
 - cnadida
 - coccidioides
17. Which of the following is NOT a function of normal flora to the host?
- metabolizes food products
 - provides essential growth factors
 - protects against infection with highly virulent microorganisms
 - maintains sterile environments
 - Stimulates immune responses
18. Correct statements concerning *Candida albicans* include all the following, EXCEPT:
- it is abudding yeast
 - causes thrush
 - it is an Opportunistic fungi
 - can not be stained by Gram stain
19. Sulphur granules containing in pus is produced by infection with:
- Novardia asteroidis*
 - Candida albicans*
 - Actinomyces Israelii*
 - Pseudomonas aeroginosa*
 - all of the above

20. All the following are anti-fungal drugs, EXCEPT one:

- a. amphotericin B
- b. flucytosin
- c. griseofulvin
- d. ketoconazole
- e. metronidazole

21. Haematopoiesis means:

- a. lymphocytes production only
- b. nucleated blood cells production only
- c. production of all Blood cells
- d. red blood cells production only

22. Lymphoid progenitor precursors that are allowed to enter the thymus are

- a. committed to B cells and expressing CD5
- b. committed to the T cell lineage and expressing CD3
- c. committed to B cells and not expressing CD5
- d. committed to the T cell lineage and not expressing CD3 (CD3-ve)

23. The end product of alternative, MBL and classical pathways is:

- a. antibody production
- b. membrane attack complex (MAC)
- c. C-reactive protein production
- d. phagocytosis

24. IL-4 could do the following functions EXCEPT:

- a. B cell proliferation
- b. Th2 proliferation (autocrine)
- c. Th1 proliferation
- d. B cell activation

25. The following are representing the antigen presenting cells (APCs) working in non-specific way EXCEPT:

- a. monocytes
- b. B cells
- c. dendritic cells
- d. macrophage (MO)

26. The following immune cells could act in specific way EXCEPT:

- a. memory B cell
- b. monocytes and monocytes precursors
- c. mast cell
- d. basophile cell

27. T cells that failed to differentiate between self and non-self antigens have to be excluded (die): that takes place during:

- a. haematopoiesis
- b. habitation
- c. positive selection
- d. negative selection

28. Endogenous antigens are only presented on:

- a. ICAM-1
- b. TCR
- c. MHC I
- d. MHC II

29. The following are the main events occur during T cell maturation (thymocytic development of T cells) EXCEPT:

- a. positive and negative selection of T cells
- b. T cells production
- c. generation and expression of TCR, CD4 and CD8
- d. T cell diversity towards Tc or Th

30. The following could activate the complement alternative pathway EXCEPT:
- a. formyl-methionyl peptide
 - b. manose
 - c. lipopolysaccharide
 - d. enterotoxin
31. The following are considered as secondary lymphoid tissues EXCEPT:
- a. LN
 - b. BM
 - c. mammary glands
 - d. spleen
32. The following are considered as stimulatory factors EXCEPT:
- a. MHC II
 - b. CD8
 - c. MHC I
 - d. TCR
33. Spleen consists of the following EXCEPT:
- a. white pulp
 - b. paracortex zone
 - c. red pulp
 - d. periarterial sheet (PALS)
34. All of the following are belonging to capsulated lymph node EXCEPT:
- a. inguinal LN
 - b. pelvic LN
 - c. Peyer's patches
 - d. cervical LN
35. Phagocytosis can be enhanced by the following EXCEPT:
- a. IgG
 - b. C3b
 - c. C3a
 - d. opsonisation
36. Hyperacute rejection occurs within a few minutes to a few hours of transplantation and invariably results in the loss of the graft and is a:
- a. type I HSR, caused by preformed IgE antibodies to blood vessels
 - b. type II HSR, caused by preformed IgG and IgM antibodies to blood vessels
 - c. type III HSR, caused by preformed IgD antibodies to blood vessels
 - d. type IV HSR, caused by preformed IgA antibodies to blood vessels
37. Certain HLA haplotypes predispose to autoimmunity; therefore, autoimmune disease tends to run in families. The haplotype that is particularly common in organ-specific diseases is:
- a. DR1
 - b. DR2
 - c. DR3
 - d. DR4
38. Clonal anergy implies that:
- a. an auto-reactive T or B lymphocyte remains in the organism, but it has been incapacitated and lacks the ability to respond to stimulation.
 - b. an auto reactive T or B cells that are full of energy
 - c. a naïve T-cell that enters a state of cloning within the thymus
 - d. antigen stimulated cloned T-cells
39. Immunologically privileged sites include the following, EXCEPT:
- a. the brain
 - b. the kidneys
 - c. the anterior chamber of the eye
 - d. the pregnant uterus

40. Secondary immunodeficiencies are those that result from all of the following, **EXCEPT**:
- a. chronic Mucocutaneous Candidiasis
 - b. cancer chemotherapy
 - c. under-nutrition for a long time
 - d. AIDS
41. Adjuvants are substances which when mixed with injected immunogens:
- a. they increase the immune response
 - b. they decrease the immune response
 - c. they produce no effect
 - d. none of the above
42. X-linked agammaglobulinemia (Bruton's disease) is an immunodeficiency disorder due to:
- a. T-cell deficiency
 - b. B-cell deficiency
 - c. phagocytic cell defect
 - d. complement deficiency
43. A tumor is a mass composed of living cells originated from ordinary somatic cells which have been modified in the following two ways:
- a. loss or decrease of one or more functions such as the synthesis of a particular metabolite or hormone
 - b. Increased ability to proliferate, that is, to divide without restraint by escaping normal control of cell division
 - c. both a and b are correct
 - d. neither a nor b are correct
44. Most immunodeficiency diseases share one common event, which is:
- a. susceptibility to repeated or chronic infections
 - b. weight loss
 - c. loss of appetite
 - d. headaches
45. Complications of live vaccines could be one of the following:
- a. decreased immunity to live viruses
 - b. reversion to wild-type which may lead to disease
 - c. giving false immunity while the patient is not immune
 - d. none of the above
46. Which of the following is NOT Gram-positive?
- a. *Listeria monocytogenes*
 - b. *Streptococcus pneumoniae*
 - c. *Staphylococcus saprophyticus*
 - d. *Klebsiella pneumoniae*
 - e. *Streptococcus pyogenes*
47. Which of the following is NOT a classification schema used to identify *Streptococci*?
- a. teichoic acids
 - b. hemolytic patterns
 - c. serologic properties (Lancefield groupings)
 - d. all the above
48. *Streptococci pneumoniae* is the number one cause of all of the following **EXCEPT**:
- a. adult meningitis
 - b. neonatal meningitis
 - c. community acquired pneumonia
 - d. otitis media in children
49. Which of the following Gram-positive cocci is catalase positive and coagulase positive?
- a. *Staphylococci epidermidis*
 - b. *Staphylococci saprophyticus*
 - c. *Staphylococci aureus*
 - d. *Streptococci pyogenes*
 - e. *Streptococci agalactiae*

50. What is the primary virulence factor for *N. gonorrhoea*?
- a. capsule
 - b. teichoic acid
 - c. pili
 - d. toxin
 - e. M protein
51. Which of the following Gram-negative rods does not ferment glucose and is oxidase positive?
- a. *E. coli*
 - b. *Proteus vulgaris*
 - c. *Pseudomonas aeruginosa*
 - d. *Salmonella*
 - e. *Shigella*
52. Which of the following is the best description of *Listeria monocytogenes*?
- a. Gram-negative spirals
 - b. Gram-negative cocci
 - c. Gram-negative rods
 - d. Gram-positive cocci
 - e. Gram-positive rods
53. Fried egg appearance is the characteristic of:
- a. *Mycoplasma hominis*
 - b. *Legionella*
 - c. *Francisella tularensis*
 - d. *Haemophilus influenzae*
54. Clinical Syndromes of *Mycoplasma hominis* is
- a. pyelonephritis
 - b. pelvic inflammatory disease
 - c. post-partum/ post abortion fever
 - d. all the above
55. All the following are considered as Legionellosis sources EXCEPT:
- a. cooling towers
 - b. whirlpool spas
 - c. nebulizers
 - d. warm, stagnant water
 - e. contaminated food
56. Hib is:
- a. conjugate vaccine for *Haemophilus influenzae*
 - b. none conjugate vaccine for *Haemophilus influenzae*
 - c. is a vaccine for *Haemophilus* and *Bordetella* spp.
 - d. none of the above
57. All the following are known as other names of human Brucellosis EXCEPT:
- a. Malta Fever
 - b. Undulant Fever
 - c. Bang's Disease
 - d. Mediterranean Fever
58. Which of the following is an endotoxin?
- a) cholera toxin
 - b) diphtheria toxin
 - c) plague toxin
 - d) LPS of salmonella
59. All the following are the characteristic of *Bordetella pertussis* EXCEPT:
- a. Gram negative coccobacillus,
 - b. strictly aerobic and motile
 - c. optimum temperature 35-36°C
 - d. produces 3 major agglutinogens
 - e. encapsulated and never fermentative

60. All the following are the characteristic of *Francisella tularensis* EXCEPT:

- a. obligate anaerobe
- b. also known as rabbit fever
- c. humans cannot transmit infection to others
- d. slow growing with a requirement for iron and cysteine.
- e. intracellular bacterium that multiplies within macrophages

61. 29. Which of the following can swarm on a plate, making it difficult to distinguish colonies?

- a. *Proteus vulgaris*
- b. *E. coli*
- c. *Shigella*
- d. *Klebsiella pneumoniae*
- e. *Salmonella*

62. Which of the following describes enteric bacteria?

- a. Gram-positive cocci
- b. Gram-negative cocci
- c. Gram-positive rods
- d. Gram-negative rods
- e. Gram-positive spirals

63. What is the most prevalent *Enterobacteriaceae* found in lower respiratory tract infections?

- a. *Escherichia coli*
- b. *Klebsiella*
- c. *Salmonella*
- d. *Yersinia*
- e. *Morganella*

64. What is the most prevalent *Enterobacteriaceae* found in gastrointestinal tract infections?

- a. *Escherichia coli*
- b. *Klebsiella*
- c. *Salmonella*
- d. *Yersinia*
- e. *Morganella*

65. Which of the following ferment lactose?

- a. *Proteus*, *Salmonella*, and *Shigella*
- b. *E. coli* and *Klebsiella pneumoniae*
- c. *Proteus* and *Salmonella*
- d. *Shigella*, *E. coli*, and *P. vulgaris*
- e. *Pseudomonas aeruginosa* only

66. Which of the following is an important cause of hemorrhagic colitis (HC) and hemolytic uremic syndrome (HUS)?

- a. Enteropathogenic *E. coli* (EPEC)
- b. Enterotoxigenic *E. coli* (ETEC)
- c. Enterohemorrhagic *E. coli* (EHEC)
- d. Enteroinvasive *E. coli* (EIEC)
- e. Enterococcal *E. coli* (EAEC)

67. Which of the following is NOT a route of transmission for *Shigella dysenteriae*?

- a. fingers
- b. flies
- c. farms
- d. food

68. Which of the following is commonly transmitted by uncooked chicken?

- a. *Salmonella typhi*
- b. *Salmonella enteritidis*
- c. *Shigella dysenteriae*
- d. *Yersinia enterocolitica*
- e. *Yersinia pestis*

69. Which of the following is the natural reservoir for urban plague (*Y. pestis*)?

- a. cows
- b. rabbits
- c. turtles
- d. rats
- e. mosquitoes

70. Cholera toxin causes an increase in which of the following, leading to severe "rice water" diarrhea?

- a. cGMP
- b. cAMP
- c. GTP
- d. ADP
- e. NADH

71. Which of the following is NOT one of the most common causes of diarrhea in the world?

- a. ETEC
- b. *C. jejuni*
- c. Rotavirus
- d. *H. pylori*

72. Which of the following is NOT oxidase positive?

- a. *Vibrio*
- b. *Pseudomonas*
- c. *Campylobacter*
- d. *Helicobacter*
- e. *Enterobacteriaceae*

73. Which of the following is NOT true for *Pasteurella multocida*?

- a. oxidase positive
- b. catalase positive
- c. Gram-negative
- d. coccobacilli
- e. non-fermentive

74. *Haemophilus influenzae* has the following characteristics, EXCEPT:

- a. a member of the parvobacteria group
- b. capsule is the principal virulence factor
- c. it requires both The X and V factors for growth
- d. able to grow on blood agar medium

75. Which of the following is associated with Pseudomembrane Colitis (PMC)?

- a. *C. difficile*
- b. *C. perfringens*
- c. *C. septicum*
- d. *C. botulinum*
- e. *C. tetani*

76. Regarding viruses, choose one correct answer:

- a. contain both DNA and RNA
- b. have their own metabolism
- c. all viruses are enveloped
- d. they contain cell wall
- e. may contain enzymes for replication

77. The following viruses contain DNA genome, EXCEPT:

- a. herpes simplex type 1 virus
- b. echoviruses
- c. adenoviruses
- d. hepadnavirus
- e. parvoviruses

78. Live attenuated vaccines are available against the following viruses, EXCEPT:
- a. polioviruses
 - b. rubella virus
 - c. yellow fever virus
 - d. influenza A virus
 - e. varicella-zoster virus
79. Concerning varicella-zoster virus, one statement is correct:
- a. causes maculopapular rash
 - b. patients with shingles are not infectious
 - c. responds to AZT therapy
 - d. remains latent in sensory ganglia following primary infection
 - e. recurrent episodes of shingles usually occur
80. Regarding cytomegalovirus (CMV), one statement is false:
- a. primary infection is usually symptomatic
 - b. an infectious mononucleosis-like syndrome may occur during primary infection
 - c. may cause severe infection in immunocompromised individuals
 - d. is teratogenic
 - e. can be sexually transmitted
81. Epstein-Barr virus (EBV) is associated with the following diseases, EXCEPT:
- a. infectious mononucleosis
 - b. Kaposi's sarcoma
 - c. Burkitt's lymphoma
 - d. nasopharyngeal carcinoma
 - e. oral leucoplakia
82. Concerning adenoviruses, one answer is true:
- a. they are similar in physical and chemical characters to picornaviridae
 - b. are single stranded DNA
 - c. may cause warts
 - d. may cause vesicular rash
 - e. may cause pharyngoconjunctivitis
83. Regarding human Papillomaviruses (HPV), one answer is true:
- a. HPV-6 and HPV-11 are associated with genital cancers
 - b. HPV-16 and HPV-18 are associated with genital cancers
 - c. they are associated with progressive multifocal leukoencephalopathy
 - d. papillomavirus infection is commonly diagnosed by virus culture
 - e. no vaccine is yet available against HPV
84. The following viruses can replicate in the gastrointestinal tract, EXCEPT:
- a. polioviruses
 - b. enterovirus 72
 - c. astrovirus
 - d. rhinoviruses
 - e. adenoviruses
85. Regarding virus detection, one statement is true:
- a. viruses can only be cultured using cell lines
 - b. the presence of cytopathic effect is the only way to detect a virus
 - c. the neutralization test is the mainstay of identification of poliovirus isolate
 - d. the haemagglutinationinhibition test is the mainstay of identification of a respiratory syncytial virus (RSV) isolate
 - e. whole blood is the specimen of choice for many common viruses
86. Which of the following viruses is not enveloped?
- a. coxsackie viruses
 - b. togaviruses
 - c. mumps virus
 - d. influenza A virus
 - e. hepatitis B virus

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87. Viruses that routinely establish latent infections in human sensory ganglia include all the following, EXCEPT:
- epstein-Barr virus
 - varicella-zoster virus
 - herpes simplex virus type 1
 - herpes simplex virus type 2
 - none of the above
88. Detection of Negri bodies in infected cells helps in the diagnosis of:
- rubella
 - rabies
 - Ebola fever
 - Lassa fever
 - Yellow fever
89. In parainfluenza viruses, one answer is true:
- segmented single stranded RNA virus
 - non segmented double stranded DNA virus
 - they may undergo antigenic shift
 - they cause acute laryngitis (croup)
 - vaccination is recommended for the prevention of infection
90. Coxsackie B viruses are associated with the following diseases, EXCEPT:
- skin rash
 - herpangina
 - Myocarditis
 - pericarditis
 - aseptic meningitis
91. Only one of the following statements is true:
- incubation period of measles virus is 3-4 weeks
 - presence of Koplik's spots excludes the diagnosis of measles
 - mumps is a common cause of diarrhea in adults
 - outbreaks of influenza A infection are due to antigenic variation
 - control of influenza A is primarily achieved by antiviral drugs
92. Antiviral agents are active against the following viruses, EXCEPT:
- interferon and hepatitis B virus
 - interferon and hepatitis C virus
 - ribavirin and respiratory syncytial virus
 - acyclovir and herpes simplex 2 virus
 - ganciclovir and mumps virus
93. The incubation period of influenza A infection is:
- one to 5 hours
 - one to 5 days
 - five to 15 hours
 - five to 15 days
 - longer than 15 days
94. Which one of the following statements best characterizes Hepatitis C virus?
- few cases progress to chronic liver disease
 - it often occurs in posttransfusion patients
 - HBV but not HCV infections occur in IV drug abusers
 - it is a DNA virus
 - blood products are not tested for antibody to HCV
95. The following viruses may be human tumor virus, EXCEPT one:
- HIV
 - papillomavirus
 - epstein-Barr virus
 - varicella-zoster virus
 - herpes simplex virus type 2

96. Which of the following markers is usually the first viral marker detected after hepatitis B infection?
- HBe antigen
 - HBs antigen
 - HBc antigen
 - anti-HBc body
 - anti-Hbe antibody
97. Which of the following viruses are associated with hemorrhagic fever?
- cytomegalovirus
 - norwalk agent
 - hepatitis E virus
 - West Nile encephalitis virus
 - Dengue virus
98. The following viruses are thought to cause gastroenteritis, EXCEPT:
- enterovirus 70
 - caliciviruses
 - rotavirus
 - astrovirus
 - adenoviruses
99. Useful prognostic criterion in HIV-infected patient is:
- CD4, CD8 count *NO-y*
 - HIV P24 antigen
 - HIV-gp120 antigen
 - HIV P24 antibody
 - HIV envelope antibody
100. All the following statements about viral hepatitis are true, EXCEPT one:
- hepatitis A virus does not lead to chronic cases
 - an effective killed vaccine is available for hepatitis C
 - hepatitis A and hepatitis E are transmitted via faecal-oral route
 - hepatitis D can only affect patients co-infected with hepatitis B
 - hepatitis B is no longer an important cause of post-transfusion hepatitis