

MICROBIOLOGY

CHAPTER#01 & 02

“INTRODUCTION & SCOPE OF MICROBIOLOGY”

“BACTERIA”

1. **Bacterial flagella is made up of _____**
 - a) Microtubules
 - b) Flagellin**
 - c) Spinin
 - d) Tubuline
2. **Surface appendage of bacteria meant for attachment for cell-cell conjugation is _____**
 - a) Pili**
 - b) Flagella
 - c) Sipinae
 - d) Cilia
3. **Extra chromosomal, circular double stranded, self replicating DNA molecules in bacteria is called _____**
 - a) Cosmid
 - b) Plasmid**
 - c) Phagimid
 - d) None of these
4. **Bacterial chromosome is _____**
 - a) Single stranded & circular
 - b) Double stranded & circular**
 - c) Single stranded & linear
 - d) None of these
5. **Differential staining of bacteria on gram staining is due to _____**
 - a) Difference in cell structure of gram +ve & gram -ve bacteria
 - b) Difference in cell wall layer component of gram +ve & gram -ve bacteria**
 - c) Difference in mode of nutrition
 - d) None of above
6. **Gram -ve organism is _____**
 - a) Streptococci
 - b) Bacillus anthrax
 - c) Clostridium
 - d) None of these**
7. **When gram +ve bacteria are stained they give _____**
 - a) Pink color
 - b) Dark purple color**
 - c) Black color
 - d) None of these
8. **On the basis of gram staining technique which form of bacteria doesn't have techoic acid?**
 - a) Gram +ve bacteria

b) Gram -ve bacteria

c) Both a & b

d) None of these

9. Which one of the following is bacilli bacteria?

a) *Treponema palidum*

b) *Neisseria gonorrhoeae*

c) *Salmonella typhae*

d) None of these

10. *Spirillum volutan* is a _____

a) *Vibrio* bacteria

b) *Spirochetes*

c) *Spirilla*

d) None of these

11. Which one of the following bacteria have higher lipid content?

a) Gram+ ve bacteria

b) Gram -ve bacteria

c) None of these

d) Both of these

12. Which one of the following bacteria lacks cell wall?

a) *Cyanobacteria*

b) *Mycoplasma*

c) *Spirochetes*

d) None of these

13. The cocci which mostly occur in single or pairs called _____

a) *Streptococci*

b) *Diplococci*

c) *Tetracocci*

d) None of these

14. Which one of the following structure protects the bacteria from phagocytosis?

a) Cell wall

b) Cytoplasm

c) *Capsule*

d) *Plasmids*

15. In _____ Robert Hook gave deception of microscope.

a) 1556

b) 1665

c) 1565

d) 1656

16. In _____ tiny microorganisms are called as animalcules.

a) 1647

b) 1674

c) 1764

d) 1746

17. Vulnerable area of body is _____

a) Ear

b) Eye

c) Throat

d) Nose

18. Microbiology is _____

a) Dynamic

b) Exploding

c) Revolutionary

d) All of above

19. The _____ needs knowledge of microbiology to fight disease.

a) Biologists

b) Geologists

c) Physician

d) Dermatologists

20. The _____ frequently uses information about microorganism in his search for oil.

a) Biologists

b) Geologists

c) **Physician**

d) Dermatologists

21. The bacteria were discovered in _____

a) 1672

b) **1673**

c) 1674

d) 1675

22. In _____ Frederick Muller named them Bacilli.

a) 1673

b) **1773**

c) 1783

d) 1763

23. The general appearance of an individual cell as seen under bright field compound microscope is known as _____

a) Cellular physiology

b) **Cellular morphology**

c) Cellular bacteriology

d) Cellular microbiology

24. The length of cylindrical bacteria is _____

a) **0.2 -20 micro meter**

b) 0.5-20 micro meter

c) 0.2-25 micro meter

d) 0.5-25 micro meter

25. The important component of bacterial cell wall is _____

a) Teichoic acid

b) **Peptidoglycan**

c) Polysaccharides

d) Dextrin

26. Periplasmic space is present in _____

a) Gram (+) bacteria

b) **Gram (-) bacteria**

c) Both of these

d) None of these

27. _____ bacteria do not form capsule.

a) Bacilli

b) Cocci

c) **Spiral**

d) All of these

28. Ribosomes are bodies of _____

a) **RNA & protein**

b) DNA & protein

c) DNA & RNA

d) All of these

29. _____ are associated with the synthesis of protein.

a) Volutin

b) Magnetosome

c) **Chromosome**

d) Inclusion bodies

30. Cell membrane contains approximately _____ proteins.

a) 40%

b) 50%

c) **60%**

d) 70%

31. Cell membrane contains approximately _____ lipids.
- 40%
 - 50%
 - 60%
 - 70%
32. _____ is any change from general state of good health.
- Infection
 - Disease**
 - Both of these
 - None of these
33. If symbiosis is beneficial to both the body & the microorganisms, then relationship is called _____
- Parasitism
 - Mutualism**
 - Commensalis
 - None of these
34. The symbiosis is beneficial only to the microorganisms, relationship is called _____
- Parasitism
 - Mutualism
 - Commensalism**
 - None of these
35. Pneumococci & species of Mycoplasma are present in _____
- Oral cavity
 - Upper respiratory tract**
 - Lower respiratory tract
 - Small & large intestine
36. The symbiotic relationship b/w host & parasite is called _____
- Parasitism**
 - Mutualism
 - Commensalism
 - None of these
37. Lactobacilli is an example of _____
- Virulent
 - A virulent**
 - Moderately virulent
 - Opportunistic

CHAPTER#03

CULTURE MEDIA

38. Which one of the following is the classification of media on the basis of chemical composition.
- Solid media
 - Semi-synthetic media**
 - Basal media
 - Selective media
39. Agar is used for which type of media?
- Solid media
 - Liquid media
 - Semi-solid media
 - Both a & c**
40. Chemical composition of which media is not known?
- Synthetic media
 - Semi-synthetic media
 - Natural media**
 - None of thee
41. On the basis of chemical composition enriched media is _____

- a) Semi-synthetic media
 b) Natural media
 c) **Synthetic media**
 d) None of these
42. **On the basis of physical state nutrient broth is _____**
 a) Solid media
 b) **Liquid media**
 c) Semi-solid media
 d) None of these
43. **On the basis of functional use EMB is _____**
 a) Differential media
 b) Basal media
 c) **Selective media**
 d) Anaerobic media
44. **Which one of the following media is prepared by using 0.2-0.5% agar?**
 a) Solid media
 b) **Semi-solid media**
 c) Both a & b
 d) None of these
45. **Which one of the following media need low O₂ Extra nutrients?**
 a) Selective media
 b) Basal media
 c) **Anaerobic media**
 d) None of these
46. **In streak plate method plates are incubates at _____**
 a) 38°C
 b) 39°C
 c) **37°C**
 d) 34°C
47. **Gram staining differentiates the bacteria by detecting _____**
 a) Plasmid
 b) Nucleotide
 c) **Peptidoglycan**
 d) None of these
48. **In gram staining procedure stain is washed with _____**
 a) Gelatin violet
 b) **Lougol's iodine**
 c) Safranine
 d) Neutral red
49. **A _____ consists of a population of cells derived from a single cell?**
 a) Culture
 b) **Pure culture**
 c) Bacteria culture
 d) All of above
50. **Very small amount of specimen can be spread over the agar is limitation of _____**
 a) Streak plate technique
 b) Pour plate technique
 c) **Spread plate technique**
 d) Serial dilution technique
51. **Minimal amount equipment is required to _____**
 a) Streak plate technique
 b) Pour plate technique
 c) **Spread plate technique**
 d) Serial dilution technique
52. **Special equipment, micromanipulator is used to _____**
 a) Spread plate method
 b) Serial dilution technique

- c) **Single cell isolation technique**
 d) All of above
53. To encourage the growth of _____ blood sugar heated before solidification:
 a) Streptococci
 b) Staphylococci
 c) **Neisseria species**
 d) All of above
54. _____ are cultivated on mannitol salt agar?
 a) Streptococci
 b) **Staphylococci**
 c) Neisseria species
 d) All of above
55. _____ is used in DNA & RNA synthesis:
 a) Sulfur
 b) **Phosphate**
 c) Ammonium phosphate
 d) Sodium chloride
56. _____ maintains a stable internal environment in the cytoplasm:
 a) Sulfur
 b) Phosphate
 c) Ammonium phosphate
 d) **Sodium chloride**

CHAPTER#04

VIRUSES

57. Viruses are _____ parasites which means that they only replicate only inside a living host cell:
 a) Aerobic intracellular
 b) Anaerobic extracellular
 c) **Obligate intracellular**
 d) Facultative extracellular
58. In the late _____ botanists had been trying to find the cause of tobacco mosaic disease:
 a) 1400s
 b) 1700s
 c) **1800s**
 d) 1900s
59. Viruses of rabies and tobacco mosaic have _____
 a) **Helical symmetry**
 b) Icosahedral symmetry
 c) Complex symmetry
 d) None of these
60. Herpes simplex and polio viruses have _____
 a) Helical symmetry
 b) **Icosahedral symmetry**
 c) Complex symmetry
 d) None of these
61. The icosahedrons a polyhedron with _____ triangular faces and _____ corners
 a) **20,12,**
 b) 12,20
 c) Both a & b
 d) None of these
62. Some bacteriophages have _____
 a) Helical symmetry
 b) Icosahedral symmetry
 c) **Complex symmetry**
 d) None of these

63. Capsid of herpes viruses is made up of _____ capsomeres

- a) 162
- b) 252
- c) 126
- d) 621

64. Capsid of adenoviruses which cause some common cold is made up of _____ capsomeres:

- a) 162
- b) 252**
- c) 126
- d) 621

65. In some viruses as _____ viruses, the envelope contains functional projection known as spike:

- a) Influenza and measles**
- b) Polio and measles
- c) Polio influenza
- d) Rabies and tobacco mosaic

66. A completely assembled viruses outside its host is known as _____

- a) Virion**
- b) Viroids
- c) Prions
- d) Both a & b

67. The genome replication of most DNA viruses takes place in the cell's _____

- a) Cytoplasm
- b) Nucleus**
- c) Ribosome
- d) Protoplasm

68. The genome replication of most RNA viruses takes place in the cell's _____

- a) Cytoplasm
- b) Nucleus**
- c) Ribosome
- d) Protoplasm

69. In _____ Andre Lwoff, Robert Horne and Paul Tournier the first to develop a means of virus classification, based on the Linnaean hierarchical system:

- a) 1952
- b) 1962**
- c) 1972
- d) 1982

70. _____ are tailed dsDNA (group I) bacteriophages:

- a) Caudovirales
- b) Herpesvirales
- c) Mononegavirales
- d) Nidovirales

71. _____ includes non-segmented (-) strand ssRNA (Group V) plants and animal viruses:

- a) Caudovirales
- b) Herpesvirales
- c) Mononegavirales**
- d) Nidovirales

72. _____ contains large eukaryotic dsDNA viruses:

- a) Caudovirales
- b) Herpesvirales**
- c) Mononegavirales
- d) Nidovirales

73. _____ is composed of (+) strand ssRNA (Group IV) viruses with vertebrate hosts:

- a) Caudovirales
- b) Herpesvirales
- c) Mononegavirales
- d) Nidovirales**

74. _____ contains monopartite ssRNA viruses that infect plants:

- a) *Mononegavirales*
- b) *Nidovirales*
- c) *Picornavirales*
- d) ***Tymovirales***

75. _____ contains small (+) strand ssRNA viruses that infect a variety of plant, insect and animal hosts:

- a) *Mononegavirales*
- b) *Nidovirales*
- c) ***Picornavirales***
- d) *Tymovirales*

76. Currently (2009) _____ orders of virus have been defined:

- a) 6
- b) 8
- c) 10
- d) 12

77. Currently (2009) _____ families of virus have been defined:

- a) 86
- b) **87**
- c) 88
- d) 89

78. Currently (2009) _____ species of virus have been defined:

- a) **2288**
- b) 2828
- c) 2882
- d) 2282

79. Herpes virus is an example of _____?

- a) **ds DNA virus**
- b) ss DNA virus
- c) ds RNA virus
- d) ss RNA virus

80. Pox virus is an example of _____?

- a) **ds DNA virus**
- b) ss DNA virus
- c) ds RNA virus
- d) ss RNA virus

81. Parvovirus is an example of _____?

- a) ds DNA virus
- b) **ss DNA virus**
- c) ds RNA virus
- d) ss RNA virus

82. Reoviruse is an example of _____?

- a) ds DNA virus
- b) ss DNA virus
- c) **ds RNA virus**
- d) ss RNA virus

83. Retrovirus is an example of _____?

- a) ds DNA-RT virus
- b) ss DNA virus
- c) **ss RNA-RT virus**
- d) ds RNA virus

84. Hepadnaviruses is an example of _____?

- a) **ds DNA-RT virus**
- b) ss DNA virus
- c) ss RNA-RT virus
- d) ds RNA virus

85. _____ is a family of viruses that include well-known viruses like Hepatitis A virus, enteroviruses, rhinoviruses, polioviruses, and foot and mouth viruses:

- a) Parvoviruses
- b) Picornaviruses**
- c) Reoviruses
- d) Retroviruses

86. Reverse transcriptase, the key enzyme that _____ use to translate their RNA into DNA:

- a) Parvoviruses
- b) Picornaviruses
- c) Reoviruses
- d) Retroviruses**

87. Symptoms of AIDS are _____ except:

- a) Encephalitis
- b) Pneumocystis
- c) Esophagitis
- d) Systemic fever**

88. Lethargy, runny nose, diarrhea, are the symptoms of _____

- a) AIDS
- b) Influenza**
- c) Measles
- d) Smallpox

CHAPTER#05

FUNGI

89. About _____ fungal species have been described.

- a) 60,000
- b) 70,000
- c) 80,000
- d) 90,000**

90. *Rhizopus stolonifer* is very common member of _____

- a) Zygomycetes**
- b) Ascomycetes
- c) Basidiomycetes
- d) Glomeromycetes

91. _____ commonly known as the sac fungi

- a) Zygomycetes
- b) Ascomycetes**
- c) Basidiomycetes
- d) Glomeromycetes

92. _____ commonly known as the club fungi.

- a) Zygomycetes
- b) Ascomycetes
- c) Basidiomycetes**
- d) Glomeromycetes

93. The simplest of the true fungi belong to the division _____

- a) Zygomycota
- b) Ascomycota
- c) Basidiomycota
- d) Chytridiomycota**

94. _____ species of Chytrids are to be found.

- a) 1,000**
- b) 1,0000
- c) 65,000

- d) 30,000
95. _____ species of Zygomycetes are to be found
- a) **1,000**
- b) 10,000
- c) 65,000
- d) 30,000
96. _____ species of Ascomycetes are to be found.
- a) 1,000
- b) 10,000
- c) **65,000**
- d) 30,000
97. _____ species of Basidiomycetes are to be found
- a) 1,000
- b) 1,000
- c) 65,000
- d) **30,000**
98. Fungi are primarily _____ organisms
- a) Marine
- b) **Terrestrial**
- c) Fresh water
- d) All of above
99. _____ are associations b/w roots of vascular plants & fungi
- a) Lichens
- b) **Mycorrhizae**
- c) Cyanobacteria
- d) None of above
100. _____ are associations of fungi & either algae
- a) **Lichens**
- b) Mycorrhizae
- c) Cyanobacteria
- d) None of above
101. Yeast is a _____ fungus
- a) **Unicellular**
- b) Multicellular
- c) Extracellular
- d) None of above
102. Yeast cells are _____ than bacteria in size.
- a) Smaller
- b) **Larger**
- c) Bigger
- d) None of above
103. About _____ species of yeast has been described.
- a) **1500**
- b) 1600
- c) 1700
- d) 1800
104. The process of fermentation is very important in _____
- a) Wine
- b) Beer
- c) Bread making
- d) **All of above**
105. _____ is used in baking & fermenting alcoholic beverages.
- a) *Candida albicans*
- b) *Zygosaccharomyces*
- c) ***Saccharomyces cerevisiae***
- d) All of above
106. Yeasts are able to grow in foods with a _____

- a) **Low pH**
 b) High pH
 c) Neutral pH
 d) None of above
- 107. Molds are _____ fungi.**
 a) Unicellular
 b) **Multicellular**
 c) Extracellular
 d) None of above
- 108. _____ hyphae are called coenocytic hyphae.**
 a) Septate
 b) **Non septate**
 c) Dimorphic
 d) None of above
- 109. _____ hyphae are composed of an outer cell wall & inner lumen.**
 a) **Septate**
 b) Non septate
 c) Dimorphic
 d) None of above
- 110. The cell wall of fungi is composed of _____**
 a) Lignin
 b) **Chitin**
 c) Cellulose
 d) All of above
- 111. _____ parasites can grow only on the host cell.**
 a) **Obligate**
 b) Facultative
 c) Both of above
 d) None of above
- 112. _____ fungi are found in the rumen of cattle**
 a) Obligate
 b) Anaerobic
 c) **Both of above**
 d) None of above
- 113. Asexual reproduction in molds include _____**
 a) Spores
 b) Conidia
 c) Fragmentation
 d) **All of above**
- 114. Members of Oomycota are collectively known as _____**
 a) Oomycetes
 b) Slime molds
 c) Water molds
 d) **Both a & c**
- 115. Saprolegnia & Achlya are _____**
 a) Parasites
 b) **Saprotrophs**
 c) Decomposers
 d) None of above
- 116. _____ live on the gills of fish.**
 a) **Parasites**
 b) Saprotrophs
 c) Decomposers
 d) None of above
- 117. Downy mildew is a disease of foliage caused by _____**
 a) **Oomycetes**
 b) Acrasiomycetes

- c) Cellular slime molds
- d) Acellular slime molds

CHAPTER#06

MICROBIOLOGY OF WATER

118. Ground water originates from _____
- a) Lakes
 - b) Streams
 - c) **Deep wells**
 - d) Shallow wells
119. Ground water is free of bacteria due to _____
- a) Filtering action of soil
 - b) **Deep sand and rock**
 - c) Both of above
 - d) None of above
120. Ground water may become contaminated when it flows along the _____
- a) Rivers
 - b) Streams
 - c) **Channels**
 - d) None of above
121. Surface water is found in _____
- a) Lakes
 - b) Streams
 - c) Shallow wells
 - d) **All of above**
122. Possible sources of microbial contamination of a body of water are _____ except
- a) Rain water
 - b) Farm animals
 - c) Industrial waste
 - d) **Deep sand & soil**
123. Contamination of drinking water with a type of *Escherichia coli* known as _____ can be fatal.
- a) O137:H7
 - b) O147:H7
 - c) **O157:H7**
 - d) O167:H7
124. The region of a water body near the shoreline is _____
- a) Warmer
 - b) Shallow
 - c) Well lighted
 - d) **All of above**
125. As the water deepens, temperatures become _____
- a) **Colder**
 - b) Warmer
 - c) Moderate
 - d) None of above
126. As the water deepens, oxygen concentration & light in the water _____
- a) **Decreases**
 - b) Increases
 - c) Moderate
 - d) None of above
127. Purple & green sulfur bacteria can grow in the _____ of oxygen.
- a) Presence
 - b) **Absence**
 - c) Both of above

d) None of above

128. At the bottom of fresh water there is _____

a) Littoral Zone

b) Limnetic Zone

c) **Benthic Zone**

d) None of above

129. _____ thrive in Benthic Zone.

a) Green sulfur bacteria

b) Photosynthetic bacteria

c) **Methane producing bacteria**

d) All of above

130. In Saltwater Microbiology, the concentration of salt is _____

a) Higher

b) Lower

c) Minimum

d) None of above

131. In Saltwater Microbiology, _____ bacteria abound near the surface

a) Lipophilic

b) **Halophilic**

c) Hydrophilic

d) Hydrophobic

132. The rapid growth & multiplication of dinoflagellates can turn the water _____

a) **Red**

b) Blue

c) Green

d) Purple

133. _____ causes life threatening diarrhea in humans.

a) **Vibrio cholera**

b) Spirillum volutan

c) Salmonella typhae

d) Streptococcus pyogenes

134. In pre-Christian times the storage of drinking water in jugs made of _____

a) **Metals**

b) Copper

c) Chromium

d) Aluminium

135. Chemicals such as _____ has been a popular means of killing bacteria

a) Iodine

b) Flourine

c) **Chlorine**

d) Bromine

136. Ascariasis is a _____ disease.

a) Viral

b) Fungal

c) Bacterial

d) **Parasitic**

137. The microbial flora of _____ is transient and variable.

a) **Air**

b) Soil

c) Water

d) None of above

138. Organisms are sprayed by _____ from the human respiratory tract

a) Coughing

b) Sneezing

c) **Both of above**

d) None of above

139. The degree of microbial contamination of indoor is influenced by factors such as _____

- a) Crowding
- b) Ventilation rates
- c) Nature of activity of the individuals occupying quarters
- d) All of above**

140. _____ have been isolated from the dust of Sanitoria

- a) Tubercle bacilli**
- b) Diphtheria bacilli
- c) Hemolytic streptococci
- d) All of above

141. _____ people lack access to safe water & _____ children die each day.

- a) 1.1million, 4500
- b) 1.1billion, 4500**
- c) 1.2million, 4500
- d) 1.2billion, 4500

CHAPTER#07

MICROBIOLOGY OF AIR

142. Algae, protozoa, yeasts, molds and bacteria have been isolated from the air _____ the surface of earth.

- a) Near**
- b) Away
- c) Both of above
- d) None of above

143. The viable bacteria and fungi occur at an altitude of _____ in air masses all the way across the North Atlantic

- a) 3,000 m**
- b) 4,000 m
- c) 5,000 m
- d) 6,000 m

144. Alternaria, Botrytis, Cladosporium & Penicillium are _____

- a) Viral species
- b) Fungal species**
- c) Bacterial species
- d) None of above

145. Pullularia is _____ like fungus in water, air and soil

- a) Mold
- b) Yeast**
- c) Both of above
- d) None of above

146. _____ is the most abundant over land as well as sea.

- a) Pullularia
- b) Alternaria
- c) Cladosporium**
- d) All of above

147. All of them are bacterial disease except

- a) Small pox**
- b) Meningitis
- c) Diphtheria
- d) Pneumonia

148. All of them are viral disease except

- a) Measles
- b) Influenza
- c) Common cold
- d) Histoplasmosis**

149. Systemic Mycosis is _____ disease.

- a) Viral
- b) Fungal**
- c) Bacterial
- d) None of above

150. _____ radiation has great potential value for reducing the microbial flora of air.

- a) Infrared
- b) Ultraviolet**
- c) Electron beam processing
- d) All of above

151. Chemical agents like _____ are effective in reducing the microbial flora

- a) Lactic acid
- b) Formaldehyde
- c) Triethylene glycol
- d) All of above**

152. A new kind of technology for controlling the microbial flora in closed spaces is known as _____

- a) Filtration
- b) Laminer-Airflow system**
- c) Setting-plate Technique
- d) Sieve & slit-type Samplers

153. _____ is used in laminar airflow system.

- a) Air filter
- b) Membrane filter
- c) HEPA filter**
- d) All of above

154. HEPA stands for _____

- a) High Efficiency Particulate Air**
- b) High Effectivity Particulate Air
- c) High Electronic Particulate Air
- d) High Economic Particulate Air

CHAPTER#08

MICROBIOLOGY OF SOIL

155. The region of earth's crust where _____ and biology meet is called soil

- a) Zoology
- b) Geology**
- c) Mycology
- d) Physiology

156. The dominant mineral particles are compounds of _____

- a) Iron
- b) Silicon
- c) Aluminum
- d) All of above**

157. Mineral constituents of soil range in size from small particles _____ to large pebbles and gravel.

- a) 0.2mm or lesser
- b) 0.02mm or lesser
- c) 0.002mm or lesser**
- d) 0.0002mm or lesser

158. Organic soil having very less _____ solids

- a) Organic
- b) Inorganic**
- c) Both of above

d) None of above

159. Organic soil having much of _____ materials

a) **Organic**

b) Inorganic

c) Both of above

d) None of above

160. The amount of water depends upon the _____

a) Soil composition

b) Amount of precipitation

c) Drainage and the living population of soil

d) **All of above**

161. Gaseous phase of soil consists of _____ except

a) Oxygen

b) Nitrogen

c) **Hydrogen**

d) Carbon dioxide

162. _____ population is highest in both number (as several! billions/gm) and variety than all the other groups of microbes

a) Viral

b) Fungal

c) **Bacterial**

d) All of above

163. Fungi are active in decomposition of _____ of plant tissue

a) **Cellulose and lignin**

b) Chitin and cellulose

c) Both of above

d) None of above

164. _____ are generally not found in large numbers except in soils of vineyards and orchards.

a) Algae

b) Molds

c) **Yeasts**

d) None of above

165. _____ fix nitrogen in paddy soils used for cultivation of rice.

a) **Algae**

b) Molds

c) Yeasts

d) None of above

166. _____ do not ingest all bacteria, they maintain some equilibrium of the bacterial flora of the soil

a) Parasites

b) **Protozoa**

c) Both of above

d) None of above

167. In the _____ cycle, microorganisms transform plant and animal residues into carbon dioxide and the soil organic matter known as humus

a) Sulphur

b) **Carbon**

c) Nitrogen

d) None of above

168. The atmosphere is approximately _____ nitrogen gas

a) 50%

b) 60%

c) 70%

d) **80%**

169. Clostridium pasteurianum is _____ bacteria

a) **Rod like**

b) Spherical

- c) *Spiral shaped*
- d) *Comma shaped*

170. **Azote means nitrogen in _____**

- a) *Latin*
- b) *Greek*
- c) **French**
- d) *Russian*

171. **Rhizo means root in _____**

- a) *Latin*
- b) **Greek**
- c) *French*
- d) *Russian*

172. **Nitrosomonas bacteria convert _____**

- a) *Nitrites to nitrates*
- b) *Nitrates to nitrites*
- c) **Ammonia to nitrites**
- d) *Ammonia to nitrates*

173. **Nitrobacter bacteria convert _____**

- a) **Nitrites to nitrates**
- b) *Nitrates to nitrites*
- c) *Ammonia to nitrites*
- d) *Ammonia to nitrates*

174. **_____ is the reduced form of sulphur**

- a) *SO₂*
- b) *SO₃*
- c) **H₂S**
- d) *None of above*

CHAPTER#09

STERILIZATION

175. **_____ is the process of killing or removing bacteria and all other forms of living organisms and their spores from preparation or articles**

- a) *Filtration*
- b) **Sterilization**
- c) *Vaccination*
- d) *Immunization*

176. **Physical methods of sterilization include all except**

- a) **Gaseous sterilization**
- b) *Dry heat sterilization*
- c) *Moist heat sterilization*
- d) *Sterilization by radiations*

177. **Sterilization by disinfectants is one of the _____**

- a) *Physical method*
- b) **Chemical method**
- c) *Mechanical method*
- d) *All of above*

178. **The standard setting for a hot air oven is atleast two hours at _____**

- a) **160°C**
- b) *170°C*
- c) *180°C*
- d) *190°C*

179. **Fixed oils, liquid paraffin, petroleum and powders are sterilized by _____**

- a) **Dry heat sterilization**

- b) Moist heat sterilization
- c) Both of above
- d) None of above

180. Volatile preparations or substances and surgical dressing can not be sterilized by _____

- a) Dry heat sterilization
- b) Moist heat sterilization
- c) Both of above
- d) None of above

181. Glass wares like flasks, test tubes, pipettes can be sterilized by _____

- a) Dry heat sterilization
- b) Moist heat sterilization
- c) Both of above
- d) None of above

182. The simplest method of dry heat sterilization is _____

- a) Flaming
- b) Hot Air Oven
- c) Incineration
- d) None of above

183. Forceps, blades, knives, needles, wire loops, metal spatulas are sterilized by _____

- a) Flaming
- b) Hot Air Oven
- c) Incineration
- d) None of above

184. Thermo labile substances and ointments can not be sterilized by _____

- a) Dry heat sterilization
- b) Moist heat sterilization
- c) Both of above
- d) None of above

185. Moist heat sterilization include _____

- a) Autoclaving
- b) Tyndallization
- c) Heating with bactericide & boiling water
- d) All of above

186. Which one of the following is not suitable for surgical dressings?

- a) Moist heat sterilization
- b) Dry heat sterilization
- c) Both a & b
- d) None of these

187. Which one of the following method is not used in dry heat sterilization?

- a) Autoclaving
- b) Tyndallization
- c) Subatomic particles
- d) All of these

188. Which one of the following method can't be used for sterilization of thermolabile substances?

- a) Dry heat sterilization
- b) Autoclaving
- c) Tyndallization
- d) All of these

189. Which one of the following can be commonly used as a bactericide in moist heat sterilization method?

- a) Benzalkonium chloride
- b) Chlorocresol
- c) Both a & b
- d) None of these

190. By using hot air oven glassware are plugged with _____

- a) Absorbent cotton
- b) Non-absorbent cotton

- c) Both a & b
- d) None of these

191. _____ is a process used for the solutions which would be denatured by heat.

- a) **Moist heat sterilization**
- b) Dry heat sterilization
- c) Both a & b
- d) Filtration

192. _____ is used for sterilization by steam under pressure

- a) **Autoclave**
- b) Hot Air Oven
- c) Both of above
- d) None of above

193. The sealed containers are heated at _____ for 30 minutes in water bath

- a) **100°C**
- b) 200°C
- c) 300°C
- d) 400°C

194. Sterilization by radiation is also known as _____ sterilization.

- a) Hot
- b) **Cooled**
- c) Both of above
- d) None of above

195. The vital structures of cells such as _____ are destroyed by radiations which kill the microbes.

- a) Glycoproteins
- b) **Nucleoproteins**
- c) Cyclicproteins
- d) None of above

196. _____ are very penetrating and are commonly used for sterilization of disposable medical equipment, such as syringes, needles, cannulas and IV sets.

- a) X-Rays
- b) **Gamma rays**
- c) Electron beams
- d) Subatomic particles

CHAPTER#10

FERMENTATION

197. The chemical process of fermentation is a type of _____ respiration because it does not use oxygen as final electron acceptor.

- a) Aerobic
- b) **Anaerobic**
- c) Both of above
- d) None of above

198. In the fermentation of glucose by certain bacteria and viruses an intermediately accepts the electrons and proton from NADH formed in reaction of _____

- a) **Glycolysis**
- b) Glucogenesis
- c) Glucogenolysis
- d) Gluconeogenesis

199. The bacterium *Streptococcus lactis* practices fermentation by using _____ to accept the electrons and proton from NADH.

- a) Lactic acid
- b) Picric acid

c) **Pyruvic acid**

d) Ethyl alcohol

200. The fermentation chemistry in yeasts such as *Saccharomyces*, the pyruvic acid is first converted to

a) Ethanol

b) Lactic acid

c) **Acetaldehyde**

d) Carbon dioxide

201. _____ use an on-off technology and provide a much higher dosing rate

a) X-Rays

b) Gamma rays

c) **Electron beams**

d) Subatomic particles

202. _____ is a fermentation product of *Acetobator* species

a) Pickles

b) **Vinegar**

c) Swiss cheese

d) Meat proteins

203. Swiss cheese develops its flavor partly from the _____ of fermentation its holes from fermentation gases

a) Citric acid

b) Picric acid

c) Pyruvic acid

d) **Propionic acid**

204. Pickles & sauerkraut are sour because bacteria ferment the carbohydrates in _____ respectively

a) Cabbage & Cucumbers

b) **Cucumbers & Cabbage**

c) Both of above

d) None of above

205. Fermentation is useful not only to the _____ but also a consumers enjoy the products of fermentation

a) Yeast

b) Bacteria

c) **Microorganisms**

d) All of above

206. In the pharmaceuticals & biotechnology industry the microbial cells or biomass as the product include _____

a) **Single cell protein**

b) Double cell protein

c) Both of above

d) None of above

207. Microbial enzymes include _____ except

a) Lipase

b) Lactase

c) Protease

d) **Hydrolase**

208. All antibiotic fermentation are _____

a) Primary metabolites

b) **Secondary metabolites**

c) Both of above

d) None of above

209. Ethanol, citric acid, glutamic acid, lysine are _____

a) **Primary metabolites**

b) Secondary metabolites

c) Both of above

d) None of above

210. *Insulin, HBV, interferon are _____*

- a) *Primary metabolites*
- b) *Secondary metabolites*
- c) **Recombinant products**
- d) *Biotransformations*

211. *Phenyl acetyl carbinol is an example of _____*

- a) *Primary metabolites*
- b) *Secondary metabolites*
- c) *Recombinant products*
- d) **Biotransformations**

212. *Fermentation is a unique process because an organic molecule _____ the electrons.*

- a) *Donates*
- b) **Accepts**
- c) *Transfer*
- d) *Exchange*

CHAPTER#11

IMMUNOLOGY

213. *What is the major function of the B-Cells?*

- a) **Produce Antibodies**
- b) *To kill viruses*
- c) *To kill people*
- d) *None of these*

214. *True or False? The Job of the immune system is to defend against pathogens, viruses and disease*

- a) **True**
- b) *False*
- c) *None of these*

215. *Disease in which a person's immune system attacks the person's own normal tissue are called*

- a) *Secondary immune diseases*
- b) *Antigen shifting diseases*
- c) **Autoimmune diseases**
- d) *Primary immune diseases*

216. *True or False? An Autoimmune disease is when the body reacts to its own tissue and mistakenly identifies them as foreign.*

- a) **True**
- b) *False*
- c) *None of these*

217. *Multiple Choice. _____ is what your body produces when your having a allergic reaction.*

- a) *Adrenaline*
- b) **Histamine**
- c) *Insulin*
- d) *None of the above*

218. *The inflammatory response includes all of the following except*

- a) **Vessel constriction**
- b) *Temperature increase*
- c) *Increased blood flow*
- d) *Phagocyte attack*

219. *Which one of the following components of the vertebrate immune response occurs first upon invasion by virus or bacterium?*

- a) *Activation of killer T lymphocytes*
- b) *Activation of B lymphocytes*

c) The inflammatory response

d) Mobilization of complement proteins

220. The maturation of T cells and the production of particular T cell receptors occurs in the _____

a) Thyroid gland

b) Thymus gland

c) All of these

d) None of these

221. Chemically an antigen may be _____

a) Lipid

b) Proteins

c) Polysaccharides

d) All of these

222. Chemically an antibody may be _____

a) Lipid

b) Proteins

c) Polysaccharides

d) All of these

223. The antigens aggregated are called _____

a) Flocculates

b) Aggregates

c) Agglutinins

d) Agglutinates

224. The antibodies that cause agglutination of cells are called _____

a) Flocculates

b) Aggregates

c) Agglutinins

d) Agglutinates

225. What type of B cell remains dormant in the body, but can respond rapidly if the same antigen appears again?

a) Memory cells

b) T cells

c) Plasma cells

d) Macrophages

226. Opsonization refers to _____

a) Coating of microorganisms or other particles by antibody and/or complement

b) Agglutination of red blood cells

c) Antibody mediated viral inactivation

d) None of these

227. Naturally acquired active immunity would be most likely acquired through which of the following processes?

a) Vaccination

b) Drinking colostrums

c) Natural birth

d) Infection with disease causing organism followed by recovery

228. Which of the following convey the longest lasting immunity to an infectious agent?

a) Naturally acquired passive immunity

b) Artificially acquired passive immunity

c) Naturally acquired active immunity

d) All of these

229. A living microbe with reduced virulence that is used for vaccination is considered

a) A toxoid

b) Dormant

c) Virulent

d) Attenuated

230. _____ are the cornerstone of immune system.

a) Macrophages

b) Lymphocytes

- c) Memory cells
- d) Suppressor cells

231. _____ is also known as non specific immunity

- a) Active immunity
- b) Passive immunity
- c) Natural immunity**
- d) Acquired immunity

232. The ability to stimulate cells of the immune system is called _____

- a) Epitope
- b) Tolerance
- c) Reactivity
- d) Immunogenicity**

233. The ability to react with products of the immune system is called _____

- a) Epitope
- b) Tolerance
- c) Reactivity**
- d) Immunogenicity

234. _____ are the antigens found in unrelated species

- a) Autoantigens
- b) Alloantigens
- c) Heterophiles**
- d) Thermophiles

235. Antibody mediated immunity is called as _____

- a) Humoral immunity**
- b) Cell mediated immunity
- c) Natural active immunity
- d) Natural passive immunity

236. In monoclonal antibodies _____ regions of each immunoglobulin molecule are same

- a) Fixed
- b) Constant
- c) Variable**
- d) None of above

237. _____ plays a major role in allergic reactions by sensitizing cells to certain antigens

- a) IgA
- b) IgE**
- c) IgM
- d) IgG

238. _____ provides resistance in the respiratory & GIT.

- a) IgA**
- b) IgE
- c) IgM
- d) IgG

239. Lyme disease is caused by _____

- a) *Bordetella pertussis*
- b) *Borrelia burgdorferi*
- c) *Mycobacterium bovis*
- d) *Clostridium perfringens*

240. Widal Test is _____ for diagnosis of different diseases

- a) Precipitation test
- b) Agglutination test**
- c) Complement fixation test
- d) None of above

241. Widal Test is used against _____

- a) *Vibrio cholera*
- b) *Salmonella typhi***
- c) *Spirillum volutan*
- d) *Staphylococcus aureus*

242. _____ is used for the diagnosis of anthrax
- TPA Test
 - Ascoli Test**
 - COOMB'S TEST
 - T. PALLIDUM CFT
243. WASSERMAN TEST is used for the diagnosis of _____
- Typhus
 - Syphilis**
 - Leprosy
 - All of above
244. There are _____ types of precipitation reactions
- 2**
 - 3
 - 4
 - 5
245. Agar-diffusion method is type of _____
- Precipitation test**
 - Agglutination test
 - Complement fixation test
 - None of above
246. Slide agglutination test is type of _____
- Precipitation test
 - Agglutination test**
 - Complement fixation test
 - None of above
247. Weil-Felix Test is type of _____
- Precipitation test
 - Agglutination test**
 - Complement fixation test
 - None of above

CHAPTER#12

VACCINES

248. Vaccines are based on the concept" of variolation originating in China, in which a person is deliberately infected with a weak form of _____
- Smallpox**
 - Chickenpox
 - Both of above
 - None of above
249. Jenner realized that milkmaids who had contact with cowpox did not get _____
- Smallpox**
 - Chickenpox
 - Both of above
 - None of above
250. Vaccination was eventually banned in England in _____
- 1838
 - 1848**
 - 1938
 - 1948
251. Vaccines can be _____
- Prophylactic
 - Therapeutic

c) **Both of above**

d) *None of above*

252. **Bacterial vaccines include _____**

a) **BCG**

b) *MMR*

c) *Polio*

d) *Yellow fever*

253. **Varicella vaccine is for _____**

a) *Smallpox*

b) **Chicken pox**

c) *Yellow fever*

d) *All of above*

254. _____ **vaccine produced from capsule polysaccharide molecule**

a) *Haemophilus influenza*

b) **Haemophilus meningitis**

c) *Both of above*

d) *None of above*

255. _____ **are the vaccines that contain microbial fraction produced by genetic engineering**

a) *Marker vaccines*

b) *Vectored vaccines*

c) **3rd generation vaccines**

d) *Heterologous vaccines*

256. _____ **are genetically engineered vaccines which involve the removal or mutation of virulence gene of the pathogen**

a) *Marker vaccines*

b) *Vectored vaccines*

c) **Gene deleted vaccines**

d) *Heterologous vaccines*

CHAPTER#13

ANTISERA PREPARATION

257. **Antisera are preparations containing antibodies introduced into the body of patient to provide**

a) *Active immunity*

b) **Passive immunity**

c) *Natural immunity*

d) *Artificial immunity*

258. **Antisera are used _____**

a) *Prophylactically*

b) *Therapeutically*

c) **Both of above**

d) *None of above*

259. **Normal human immunoglobulins are _____**

a) *Specific Antisera*

b) **Non specific Antisera**

c) *Both of above*

d) *None of above*

260. **Globulin consists of three distinct components except _____**

a) *IgA*

b) **IgE**

c) *IgG*

d) *IgM*

261. **Gas gangrene is _____ infection.**

- a) Viral
- b) Fungal
- c) **Bacterial**
- d) All of above

262. _____ is the microorganisms that produce gas in tissues.

- a) *Bordetella pertussis*
- b) *Borrelia burgdorferi*
- c) *Mycobacterium bovis*
- d) ***Clostridium perfringens***

263. _____ is prepared in horses

- a) **Rabies antiserum**
- b) *Leptospira antiserum*
- c) Specific Antisera
- d) Non specific Antisera

264. _____ routes are used for injection in antibacterial sera

- a) I/V
- b) I/M
- c) Both of above
- d) None of above

265. *Leptospira antiserum* is an example of _____

- a) Antiviral sera
- b) **Antibacterial sera**
- c) Specific Antisera
- d) Non specific Antisera

266. Serum is the component that does contain _____

- a) Red blood cells
- b) White blood cells
- c) Clotting factor
- d) **All of above**

267. Blood clotting means _____

- a) **Coagulation**
- b) Flocculation
- c) Precipitation
- d) Agglutination

268. Antiserum is blood serum containing _____

- a) **Polyclonal antibodies**
- b) Monoclonal antibodies
- c) Both of above
- d) None of above

269. Rabies antiserum is given _____

- a) IV
- b) IM
- c) IP
- d) **SC**