

Microbiology
Unit- 1

1. According to Bergey's Manual of Systematic Bacteriology, prokaryotes that lack a cell wall belong to the group?
a) Gracilicutes b) Firmicutes c) **Tenericutes** d) Mendosicutes
2. Which among the following kingdoms were proposed by Whittaker?
a) Monera
b) Protista, Fungi
c) Plantae, Animalia
d) **Monera, Protista, Fungi, Plantae, Animalia**
3. Lipopolysaccharide in cell walls is characteristic of?
a) Gram-positive bacteria
b) **Gram-negative bacteria**
c) Fungi
d) Algae
4. Which of the following symmetry is exhibited by rod-shaped viruses?
a) icosahedral
b) **helical**
c) complex
d) circular
5. Fungi are _____
a) prokaryotic
b) eukaryotic
c) prokaryotic and lack chlorophyll
d) **eukaryotic and lack chlorophyll**
6. Which microorganism(s) among the following perform photosynthesis by utilizing light?
a) **Cyanobacteria**
b) Fungi
c) Viruses
d) Cyanobacteria, Fungi and Viruses
7. Adenoviruses exhibit which of the following symmetry?
a) helical symmetry
b) circular symmetry
c) **icosahedral symmetry**
d) complex structure symmetry
8. The transfer of genes from one cell to another by a bacteriophage is known as _____
a) Recombination
b) Conjugation
c) **Transduction**
d) Transformation

9. The cell in which the F factor carries along with it some chromosomal genes are known as _____

- a) F+ cell
- b) F— cell
- c) F' cell**
- d) F''' cell

10. The xanthophyte walls are typically of _____

- a) chitin
- b) cellulose
- c) cellulose and pectin**
- d) starch

11. Vaucheria is a single-celled organism.

- a) True
- b) False**

12. In Chlamydomonas the most common method of sexual reproduction is _____

- a) isogamy**
- b) heterogamy
- c) oogamy
- d) spore formation

13. What are bacteriocins?

- a) proteins**
- b) toxins
- c) plasmid
- d) sex factor

14. What are the dimensions of the filaments that the thallus of a fungus consists of?

- a) 1 micrometre
- b) 5 to 10 micrometre**
- c) 1 metre
- d) 1 centimetre

15. Two lateral flagella are present in which of the following groups of algae?

- a) Rhodophycophyta
- b) Xanthophycophyta
- c) Phaeophycophyta**
- d) Bacillariophycophyta

16. Phycoerythrin pigment is present in which algal division?

- a) Xanthophycophyta
- b) Rhodophycophyta**
- c) Chrysophycophyta
- d) Phaeophycophyta

17. Coenocytic hyphae have _____
a) septate with uninucleate cells
b) septate with multinucleate cells
c) no septate
d) no septate with uninucleate cells
18. The correct order of taxonomic groups from higher to lower rank is?
a) Kingdom—Order—Class—Family
b) Order—Class—Division—Family—Genus—Species
c) Kingdom—Order—Division—Family—Class—Genus—Species
d) Kingdom—Division—Class—Order—Family—Genus—Species
19. In the classification of bacteria according to shape, which among the following refer to cuboidal arrangement of bacterial cells?
a) Tetrads
b) Staphylococci
c) Sarcinae
d) Streptococci
20. Which group of bacteria among the following have the largest area of contact?
a) Palisades
b) Trichomes
c) Streptobacilli
d) Diplobacilli
21. Which scientist of the following is the pioneer of microbiology with high quality magnifying lenses (early microscopes).
a) Anton Van Leeuwenhoek b) Louis pastor
c) Robert Hook d) Semmelweis.
22. For the fragrance of soil, which organism is responsible?
a) Bacteria b) Algae c) Fungi d) **Actinomycetes**
23. Viruses have all characteristics, except
a) has either DNA or RNA b) are obligatory parasite
c) has metabolic machinery d) **are non cultivable on Laboratory media**
24. Which of the following bacteria can grow in acidic pH?
a) *Vibrio cholera* b) ***Lacto bacilli*** c) *Shigella* d) *Salmonella*
25. The fungal cell wall is made up of-----
a) Chitin b) Cellulose c) **Chitin and Cellulose** d) Pectin

26. Which among the following are asexual spores?
a) **Blastospores**
b) Ascospores
c) Basidiospores
d) Zygosporos
27. Aplanospores are _____
a) motile sporangiospores
b) **nonmotile sporangiospores**
c) oidia
d) chlamydospores
28. Which of the following spores are formed at the tips of sterigmata?
a) Zygosporos
b) Oospores
c) **Basidiospores**
d) Blastospores
29. In which of the following method, the viral particles are transmitted through lysis of cell?
a) **Lytic cycle**
b) Lysogeny
c) Replication
d) Translation
30. What does a viral DNA becomes after being associated with the bacterial chromosome?
a) gene
b) **prophage**
c) plasmid
d) plaque
31. Which one is photosynthetic organism?
a) Fungi b) **algae** c) Protozoa d) Viruses

Unit-2

32. The pH of the PDA medium is-----
a) 5 b) 3.6 c) **5.6** d) 9
33. The portion of the growth curve where a rapid growth of bacteria is observed is known as _____
a) Lag phase
b) **Logarithmic phase**
c) Stationary phase
d) Decline phase

34. Lag phase is also known as _____
a) **period of initial adjustment**
b) transitional period
c) generation time
d) period of rapid growth
35. Which of the following is used to grow bacterial culture continuously?
a) **Chemostat**
b) Hemostat
c) Coulter-Counter
d) Turbidostat
36. The average size of the cells in the exponential phase is _____
a) larger than the initial size
b) **smaller than the initial size**
c) equal to the initial size
d) maybe smaller or larger than the initial size
37. Gram staining was introduced by _____.
a. Christian Gram b. Robert Hook c. Louis Pasteur d. Alfred gram
38. Which of the following is an indirect method for measuring bacterial growth?
a) Cell count
b) Cell mass
c) **Cell activity**
d) Both Cell mass and Cell activity
39. Which of the following method is used for viable count of a culture?
a) Direct microscopic count
b) Plate-count method
c) Membrane-filter count
d) **Plate-count method and membrane-filter count**
40. Colony-forming units per ml is the unit of _____
a) Microscopic count
b) Electronic enumeration
c) **Plate count**
d) Turbidimetric measurement
41. What is the correct order of staining reagents in Gram-Staining?
a) Crystal violet, alcohol, iodine solution, safranin
b) **Crystal violet, iodine solution, alcohol, safranin**
c) Crystal violet, safranin, alcohol, iodine solution
d) Iodine solution, crystal violet, alcohol, safranin
42. Which bacteria appears purple-violet colour after staining?
a) **Gram-positive**
b) Gram-negative
c) Both Gram-positive and Gram-negative
d) Neither Gram-positive nor Gram-negative

43. Which of the following are true for Gram-negative bacteria?
- upon alcohol treatment, the permeability of the cell wall increases
 - crystal violet-iodine (CV-I) complex is extracted
 - pore size decreases and the CV-I complex cannot be extracted
 - alcohol treatment increases the permeability of the cell wall and the CV-I complex can be extracted**
44. Which of the staining technique helps in demonstrating spore structure in bacteria as well as free spores?
- Acid-fast stain
 - Endospore stain**
 - Capsule stain
 - Flagella stain
45. In Gram-staining, iodine is used as a _____
- fixative
 - mordant**
 - solublizer
 - stain
46. Growth of microbes in a solid media is identified by the formation of?
- pellicle at the top of media
 - colonies**
 - sediment at the bottom
 - turbidity
47. Most microbial structure and enzymes are composed by _____.
- Lipids
 - Proteins
 - Carbohydrates
 - Lipids and Carbohydrates
48. Acid fast staining is a _____ procedure
- Negative staining
 - Spore staining
 - Differential staining
 - Positive staining
49. Which of the following procedure can be used to isolate a Pure culture of a bacterium from a mixture?
- Streak plating
 - Dilution plating
 - Enrichment culture
 - All the above.**
50. Bacterial population is highly found in-----
- Lag phase
 - Log phase
 - Stationary phase
 - Decline phase.
51. Generation time of *E.coli*----
- 2 minutes
 - 20 minutes**
 - 10 minutes
 - 15 minutes

Unit-3

52. The diseases regularly found among particular plant or in a certain area which appear very virulently is called as
- Pandemic
 - Epidemic
 - Endemic**
 - Sporadic

a) above 121°C

c) above boiling point

d) above 150°C

a) High acid Food

b) Acidic Food

c) Medium acid Food

d) Low acid Food

a. *Alternaria solani*

b. *Xanthomonas campestris*

c. *Sychytrisendo bioticum*

d. Phytophthora infestans

a) If the incidence rate of the disease falls.

b) If survival time with the disease increases.

c) If recovery of the disease is faster.

d) If the population in which the disease is measured increases

a) Spore

b) Leaf

c) Root

d) Cuticle

a) Trees

b) Carnivorous plants

c) Herbivores

d) Flowers

a) Polycyclic pathogen

b) Phytoalexins

c) Monocyclic pathogen

d) None of the above

a) Bacterial disease

b) Fungal disease

c) Viral disease

d) Nematode disease

a. Rotted cane

b. Curling of leaf

c. Yellowing of leaf

d. Clear juice

Unit- 4

62. Most spoilage bacteria grow at _____.
a. Acidic pH b. Alkaline pH c. Neutral pH d. Any of the pH
63. In the high-temperature short-time (HTST) method of pasteurization, milk is exposed to a temperature of _____.
a) 132 degree F
b) 145 degree F
c) 161 degree F
d) 120 degree F
64. The temperatures used for canning foods ranges from _____.
a) 0-20 degree C
b) 20-60 degree C
c) 60-100 degree C
d) 100-121 degree C
65. Toxic Shock Syndrome' in humans is caused by _____.
a. *Lactobacillus* b. *Staphylococcus aureus*
c. *Saccharomyces cerevisiae* d. *Mycobacterium leprae*
66. Which of the following microorganism is eliminated in canned foods?
a) *Mycobacterium tuberculosis*
b) *Coxiella burnetii*
c) *Clostridium botulinum*
d) *Lactobacillus*
67. Which among the following are produced by microorganisms?
a) Fermented dairy products
b) Breads
c) Alcoholic beverages
d) Fermented dairy products, breads and alcoholic beverages
68. Which chemical is used to inhibit mold growth in bread?
a) benzoic acid
b) nitrates
c) sorbic acid
d) lactic acid
68. Any change that renders food unfit for human consumption is called-----
a. Processing **b. Spoilage** c. Deterioration d. Preservation
69. Acetic acid and lactic acid are used for _____.
a) curing meats
b) preservation of color
c) preservation of pickles
d) inhibiting mold growth

70. Spoilage in food because of microbial activity can be prevented or delayed by
a. Prohibiting the entry of micro-organisms in food
b. Physical removal of micro-organisms
c. Hindering the activity of micro-organisms
d. All of above
71. The growth of aerobic food spoilage and pathogenic microorganisms can be suppressed by
a. Humectants b. Exhausting **c. Both a and b** d. None of above
72. The temperature resistance of microorganism in high acid food is-----
a. High b. Medium c. Low **d. No effect**
73. Food intoxication is the ingestion of-----
a. Toxin produced by microorganism
b. Toxin producing microorganism
c. Non of both
d. Both of these
74. Phosphatase enzyme present in milk is destroyed in which of the following processes?
a) Sterilization
b) Canning
c) Dehydration
d) Pasteurization
75. *Clostridium Botulinum* is-----
a. Bacteria b. Mold c. Yeast d. Virus
76. Pasteurization is the heat treatment designed primarily to kill-----
a. Vegetable forms of microorganisms
b. All form of microorganisms
c. Spore
d. None of above
77. Jellies and jams are rarely affected by bacterial action.
a) True
b) False
78. Which of the following method is used for treatment of water used for the depuration of shellfish?
a) Chemicals
b) Radiation
c) Low temperature
d) Osmotic pressure

91. *Acetobacter aceti* converts ----- into acetic acid.
 a) **ethyl alcohol** b) glucose c) methanol d) starch
92. Which one of the following is not a fermented product?
 a) Antibiotics b) Citric acid c) Alcohol **d) Vaccine**
93. Lactic acid bacteria include-----
 a. *Lactococcus lactis* b. *Lactococcus cremoris*
 c. *Bifidobacterium* **d. All above**
94. The sugar concentration of molasses used in fermentation should be -----
 a) 20-30% **b) 10-18%** c) 30-38% d) 4-5%
95. The production of acetic acid from ethanol is an -----
 a) aerobic process **b) anaerobic process**
 c) a combination of both d) none of the above
96. Which of the following is not an industrial product made by the fungus *Aspergillus niger*?
 a) Rhizopus nigricans b) *Penicillin notatum*
 c) *Candida pseudotropicalis* **d) *Aspergillus niger***
97. Fungal amylases using stationary culture with wheat bran utilizes -----
 a) *A. niger* **b) oryzae** c) *S. cerevisiae* d) *A. flavus*
98. Which of the following is not an industrial product made by the fungus *Aspergillus niger*?
 a) Galactosidase b) Citric acid c) Gluconic acid **d) Lysine**
99. Alcohol production from starch and raw sugar utilizes selected strains of-----
a) *Saccharomyces cerevisiae* b) *Candida pseudotropicalis*
 c) *Candida utilis* d) *Aspergillus niger*

K3

Unit -1

1. List out the scope of microbiology.
2. Outline the Baltimore classification of virus.
3. Briefly describe the general characteristics of viruses.
4. Comment on the classification of fungi.
5. Give an account of general characters of Bacteria
6. Describe the characteristic shapes of bacteria.
7. Write short notes on microbial diversity
8. Brief notes on the general characters of a protozoa

Unit 2

9. How will you prepare Nutrient agar medium for bacterial growth?
10. Classify the microorganisms based on its nutritional types.
11. Define sterilization. Classify various methods of sterilization with suitable examples.
12. Briefly explain any two microbial media.
13. Briefly explain a procedure to isolate bacteria from an infected plant tissue.
14. How will you preserve pure culture?
15. Discuss the characteristics and types of culture media
16. Classify the bacteria on the basis of flagella
17. How would you visualize capsules, endospores, and flagella in bacteria?
18. What characteristic shapes can bacteria assume? Describe the ways in which bacterial cells cluster together.
19. What are peptones, yeast extract and agar? Why are they used in media?

Unit 3

20. Write the symptoms, causative organism and control measures of red rot of Sugarcane.
21. What are monocyclic and polycyclic pathogens? Explain.
22. Write a detailed account on the physical defense mechanism in plants
23. Mention the causative organism, symptoms and control measures of Blast disease of Paddy.
24. What are the symptoms caused by fungi in plant diseases?

25. Explain the disease triangle with respect to plant diseases.

Unit 4

26. How will you identify the adulteration in foods?
27. Write short notes on microbial spoilage of foods.
28. Briefly explain the cheese making process.
29. Comment on food poisoning
30. Comment on food intoxication
31. What is Food adulteration? How will you identify the adulteration in foods?

Unit 5

32. Draw and label the parts of Fermenter.
33. Write a detailed account on batch fermentation
34. Enumerate the application of cell and enzyme mobilization techniques in industrial microbiology
35. Differentiate batch fermentation and continuous fermentation.
36. Give an account of industrial Microbiology
37. Explain the production of Alcohols
38. Describe the production of citric acid.
39. Describe the production of amylase

K4 level question

Unit 1

1. Write an essay on single cell protein
2. Explain the classification of fungi proposed by Alexopoulos and Mims.
3. Write an essay on the scope of microbiology
4. Outline Fritsch's classification of algae.

5. Classify the bacteria by Bergey's (1974) manual.
6. Write an essay on Bacterial reproduction.
7. Write an essay on fungal reproduction.

Unit 2

8. Classify the types of culture media with examples and their uses
9. How will you isolate, maintenance and preservation of pure culture in laboratory.
10. Explain sterilization techniques employed during microbial culture.
11. Define growth curve. Describe the four phases of the growth curve in a closed system. What are the factors affecting bacterial growth curve?
12. How will you isolate microorganism from infected plant tissue? Explain.
13. Give a brief account of Maintenance of pure culture.
14. Briefly explain the microbial staining techniques.

Unit 3

15. Give an account on pathogen attack and defense mechanism in plants.
16. Write an essay on various methods of transmission and spread of plant pathogens.
17. Describe Panama disease of banana.
18. Write an essay on epidemiology of plant diseases
19. Write about symptoms, causative organisms and control measures of late blight of Potato.

Unit-4

20. Discuss the preservation methods of milk and milk products.
21. Briefly describe the food preservation methods
22. Give brief account on the fermentation process of foods.
23. Describe the detailed notes on preservation of fruits and vegetables

Unit 5

24. Write a detailed account on immobilization.
25. Describe the production of citric acid in industry
26. Write an essay on microbial products and its production.
27. Write an essay on Industrial production of enzymes