

BOT2MN100:Microbial Diversity & PhytoPathology

Section-A-Mark-3

1. Illustrate the unique features of the Monera kingdom
2. Summarize the criteria used by Whittaker to classify organisms into five kingdoms
3. Explain the major characteristics of Plantae and Animalia kingdoms.
4. Explain the key characteristics of Protista and Monera in Whittaker's system
5. Explain any three evolutionary significance of Whittaker's classification
6. Explain any three types of microorganisms you have studied
7. Explain the basic characters of virus
8. Describe the general structure of a typical virus
9. Illustrate the occurrence of viruses in different habitat
10. Explain the structure of TMV
11. Explain capsomeres
12. Describe the structure of a T4 bacteriophage
13. Describe the structure of virions
14. Explain the difference between virus and virions
15. Describe the structure of prions
16. Describe the structure of mycoplasma
17. Describe the key features of the COVID-19 pathogen
18. Describe the key features of H1N1 pathogen
19. Explain the causative organism, structure and mode of transmission of COVID - 19 virus
20. Explain the causative organism, structure and mode of transmission of H1N1 virus
21. Explain the causative organism and structure of H1N1 and COVID - 19 virus

22. Explain the difference between Eubacteria and Archaeobacteria based on their cell wall structure
23. Explain thermophiles
24. Describe psychrophiles
25. Describe halophiles
26. Explain any six characters of Eubacteria
27. Explain why psychrophiles are found in polar regions and deep oceans
28. Describe the major shapes of bacteria and provide examples
29. Explain the role of the bacterial cell wall
30. Summarize the function of flagella
31. Explain the difference between plasmid and episome
32. Explain the difference between coccus and bacillus bacteria
33. Summarize the function of pilli
34. Describe the basic composition of the Gram-positive bacterial cell wall.
35. Summarize the role of teichoic acids in Gram-positive bacterial cell walls.
36. Describe the basic composition of the Gram-negative bacterial cell wall.
37. Illustrate the differences in staining results between Gram-positive and Gram-negative bacteria.
38. Explain the difference between gram positive and gram negative bacteria
39. Explain the procedure of Acid fast staining
40. Describe the procedure of Gram staining
41. Explain the importance of the thick peptidoglycan layer in Gram-positive bacteria
42. Summarize the role of mycolic acids in acid-fast bacteria
43. Explain how penicillin affects the bacterial cell wall
44. Describe the role of lysozyme in degrading the bacterial cell wall

45. Explain the mechanism of action of vancomycin on the bacterial cell wall
46. Summarise the effect of any three types antibiotics
47. Summarise the effect of any three types enzymes
48. Describe the basic structure of the bacterial cell membrane
49. Explain the function of phospholipids in the bacterial cell membrane.
50. Explain the role of mesosomes in bacterial cells
51. Summarize how proteins are embedded in the bacterial cell membrane to support transport
52. Explain any two chemical composition of the bacterial cell membrane
53. Describe the structure of mesosomes in bacterial cells
54. Explain the difference between lag phase and log phase of bacterial growth
55. Illustrate the stationary phase in the bacterial growth curve
56. Summarise the difference between binary fission and endospore in bacteria
57. Explain the characteristics of the death phase in bacterial growth
58. Explain binary fission in bacteria
59. Summarise the difference between transformation and transduction
60. Summarise the key steps involved in transformation in bacteria
61. Describe the role of a bacteriophage in the transduction process
62. Explain the significance of pili in bacterial conjugation
63. Summarise the differences between the donor and recipient cells in bacterial conjugation
64. Describe the objective of streaking method for pure culture isolation.
65. Explain any two types of streaking techniques for pure culture isolation
66. Explain the difference between quadrat streaking and continuous streaking method
67. Describe the limitations of serial dilutions

68. Describe any three advantages and disadvantages of streaking method
69. Explain lyophilization
70. Summarise the various environmental factors essential for preserving pure culture
71. Describe any three types of biopesticides
72. Summarize any three advantages and disadvantages of biopesticides
73. Explain any three mechanism of plant growth promoting bacteria
74. Summarise the challenges in microbial biofuel production
75. Explain the benefits of biofertilizers
76. Explain antibiotics and spectrum of antibiotic activity
77. Explain probiotics and its types
78. Describe bacteriophage therapy
79. Summarise any three mechanism of antimicrobial resistance
80. Explain any three mechanism of probiotics
81. Summarise the application of viral vectors in gene therapy
82. Describe viral vectors in genetic engineering
83. Explain any three types of viral vectors
84. Describe gene therapy
85. Summarise the role of retro virus and adeno-associated virus in genetic engineering
86. Describe the different types of bacteria used in industrial fermentation
87. Explain bioaugmentation
88. Explain biostimulation
89. Summarise the difference between bioaugmentation and biostimulation
90. Explain the key aspects of bioaugmentation
91. Explain the key aspects of biostimulation

92. Explain plant disease and its importance in agriculture
93. Describe the role of fungi as plant pathogens
94. Explain the common symptoms of bacterial plant diseases
95. Explain chlorosis
96. Describe the role of virus as plant pathogens
97. Summarize the key differences between bacterial and fungal plant pathogens.
98. Describe Koch's postulates
99. Explain penetration in host-parasite interactions
100. Describe the role of phytoalexins in plant immunity.
101. Describe the function of elicitors in plant-pathogen interactions.
102. Describe how phenolic compounds act as a defense strategy in plants.
103. Describe any three cultural practices used in disease management
104. Explain how botanical methods are applied in plant disease management.
105. Describe any three environmental concerns associated with chemical disease management
106. Summarize the concept of Integrated Disease Management (IDM)
107. Describe management strategies for fungicide resistance
108. Explain the role of biological control agents in disease management
109. Describe the symptoms of Grey Leaf Spot disease in coconut.
110. Summarize the epidemiology of Quick Wilt of pepper caused by fungal pathogens.
111. Describe the management strategies for Citrus Canker
112. Explain the symptoms of Tapioca Mosaic disease
113. Explain the symptoms of Bunchy Top disease in banana.
114. Summarize the management practices for Blast of Paddy

1. Explain the key differences between the Protista and Fungi kingdoms in Whittaker's system
2. Explain the evolutionary significance of Whittaker's classification
3. Explain the different types of microorganisms
4. Explain the golden era of microbiology
5. Explain lytic cycle of virus
6. Explain the different types of architecture in virus
7. Explain the difference between lytic and lysogenic cycle of virus
8. Explain the characters and occurrence of virus
9. Explain the structural differences between bacteriophages and Mycoplasma
10. Discuss the structural organization of prions and compare them with virions
11. Discuss the key structural differences between T4 bacteriophages, prions, and Mycoplasma
12. Explain the structural differences between prions and Mycoplasma
13. Explain the general account of COVID - 19 virus
14. Explain the general account of H1N1 virus
15. Explain the strategies used to mitigate the impact of COVID-19 and H1N1
16. Explain the structure, symptoms, pathogenesis and mode of transmission of COVID - 19 and H1N1 virus
17. Explain the characters of Eubacteria
18. Summarize the characters of thermophiles and psychrophiles in extreme temperature conditions
19. Summarize the characters of halophiles and psychrophiles in extreme temperature conditions
20. Summarize the characters of halophiles and thermophiles in extreme temperature conditions
21. Discuss the morphological diversity of bacteria with the help of diagrams and examples

22. Explain the ultrastructure of bacteria
23. Explain the different organelles present in bacterial cytoplasm
24. Explain the different organelles present outer to bacterial cytoplasm
25. Discuss the structural features of Gram-negative bacterial cell walls that make them more resistant to certain antibiotics.
26. Explain the procedure and mechanism of gram staining
27. Explain the structure of gram positive bacteria
28. Explain the structure of gram negative bacteria
29. Explain the mechanisms by which penicillin and lysozyme disrupt the bacterial cell wall
30. Explain the types of antibiotics and their effect on bacterial cell wall
31. Explain the types of enzyme and their effect on bacterial cell wall
32. Explain the mechanisms of antibiotics and enzymes on the bacterial cell wall
33. Explain the structure of bacterial cell membrane
34. Explain the chemical composition of the bacterial cell membrane
35. Explain the functions of bacterial cell membrane
36. Discuss the structure and functions of Mesosomes
37. Explain the phases of the bacterial growth curve
38. Discuss the different methods of asexual reproduction in bacteria
39. Discuss the steps involved in binary fission and their importance in microbial reproduction
40. Discuss the difference between log phase and stationary phase of bacterial growth curve
41. Explain the conjugation between F⁺ and F⁻ strains of Bacteria
42. Explain transformation in Bacteria
43. Explain any two methods of reproduction in Bacteria
44. Describe transformation and transduction in Bacteria

45. Explain the different types of streaking techniques for pure culture isolation
46. Explain serial dilution and the process of serial dilution
47. Explain plating method and the process of plating
48. Explain different types of storage technique for preserving pure culture
49. Explain the importance of micro organisms in agriculture
50. Explain the different types of biofertilizers
51. Explain biofuels and different types of biofuel
52. Summarize the contribution of soil microbes to plant health.
53. Explain antibiotics and its different types
54. Explain different mechanism of antibiotic resistance
55. Describe antimicrobial resistance and its mechanism
56. Summarise the different categories of microbial therapeutics
57. Explain different types of viral vectors
58. Explain gene therapy and application of viral vectors in gene therapy
59. Describe virus and role of viral vectors in genetic engineering
60. Explain virus and its different types
61. Explain any three application of extremophiles in biotechnology
62. Describe bioaugmentation and its key aspect in environmental remediation
63. Describe biostimulation and its key aspect in environmental remediation
64. Explain the role of bacteria in industrial fermentation
65. Explain the symptoms of viral plant diseases and their effects on plant health
66. Explain the symptoms of fungal plant diseases and their effects on plant health
67. Describe the different types of plant pathogen
68. Explain the symptoms of mycoplasma and nematode plant diseases and their effects on plant health
69. Explain the steps involved in Koch's postulates and its challenges

70. Discuss the enzymatic and phenolic defense mechanisms of plants against pathogens.
71. Explain any three defence strategies of plants against pathogens
72. Explain the prepenetration of host parasite interaction
73. Explain cultural and botanical methods of disease management in terms of environmental sustainability.
74. Discuss the impact of chemical residues on environment
75. Illustrate how Integrated Disease Management combines multiple approaches for effective control.
76. Explain the effectiveness of biological and chemical methods in plant disease management.
77. Describe the causative organism, symptoms and management of Grey Leaf Spot disease in coconut.
78. Describe the causative organism, symptoms and management of Quick wilt of pepper.
79. Describe the causative organism, symptoms and management of Citrus canker
80. Describe the causative organism, symptoms and management of Blast of paddy
81. Describe the causative organism, symptoms and management of Tapioca mosaic disease
82. Describe the causative organism, symptoms and management of Bunchy top of banana

Section-C-Mark-10

1. Explain Whittaker's classification and its evolutionary significance
2. Explain the different types of multiplication in virus
3. Explain the structure of bacteriophages, virions, prions, and Mycoplasma
4. Explain the structure, symptoms, pathogenesis, mode of transmission and preventive measures of COVID - 19 and H1N1 virus
5. Explain the characters of Eubacteria and Archeobacteria in understanding bacteriology

6. Explain the morphology and ultrastructure of bacterial cell
7. Explain the structure of gram positive and gram negative bacteria. Give the difference in their cell wall
8. Explain the types and mechanisms of action of antibiotics and enzymes on the bacterial cell wall
9. Explain the structure and functions of bacterial cell membrane
10. Explain the phases of the S-curve in bacterial growth, and explain how different asexual reproduction methods contribute to microbial survival
11. Explain the different methods of reproduction in Bacteria
12. Explain streaking method with its objectives, process and different types of streaking
13. Explain the different types of biofertilizers and its advantages and disadvantages
14. Explain antibiotics, its types and mechanism of action
15. Explain the role of viruses as tools in genetic engineering
16. Explain the role of extremophiles in biotechnological applications
17. Explain the symptoms of fungal and viral plant diseases on plant health
18. Explain host parasite interaction with the help of different steps involved
19. Explain biological management strategies with its advantages and limitations
20. Explain the etiology, symptoms, epidemiology, and management of Grey Leaf Spot disease of coconut, Citrus Canker and Tapioca Mosaic virus plant diseases