

Bajaj College of Science, Wardha

Practice Sheet during Lockdown

B.SC.I SEMESTER II

Subject: Microbiology

Microbial Techniques

Long Questions (7 Marks)

1. What is Microscope? Add a note on image formation in compound microscope.
2. Define microscope. Explain different parts of compound microscope
3. Explain Scanning Electron Microscopy with respect to its principle, working & ray diagram.
4. Explain the fluorescence microscopy in detail.
5. Compare bright field and dark field microscope.
6. What is Electron Microscopy? Explain the Transmission Electron Microscopy
7. Write a note on sample preparation for Electron Microscopy
8. Explain principle & working of phase contrast microscope.
9. Explain the image formation of Confocal microscope
10. Differentiate between dye and stain? Explain the chromophore and auxochrome concept with examples.
11. Define dye and explain different types of dyes with suitable example.
12. What is mordant? How it is classified? Give mechanism of action with suitable example.
13. What is stain? Explain simple staining with principle and significance
14. Explain principle and procedure of Gram staining
15. Explain principle and procedure of Acid Fast staining
16. What are Metachromatic granules? How is it stained?
17. What is Capsule? Explain the principle and procedure of Capsule staining
18. What is the locomotory organ in Bacteria? How it is stained.
19. How bacteria reproduce by binary fission in bacteria.
20. What is generation time? How it is calculated

21. Explain concept of growth & Give the Mathematical expression of growth.
22. Describe Growth Rate & Generation Time.
23. Explain in detail Growth curve of bacteria
24. Describe reproduction of bacteria by means of budding & fragmentation.
25. What is Continuous Culture? How the continuous culture is maintained in Chemostat
26. Explain the working of Turbidostat
27. Define disinfectant. Describe the mode of action of following disinfectants
 - a) Phenolic compound
 - b) Halogen
 - c) Heavy metal
28. Explain the conditions affecting the effectiveness of antimicrobial agent activity.
29. Define sterilization. Explain the use of moist heat to control microorganisms
30. Explain the use of dry heat to control microorganisms
31. Why moist heat is more effective than dry heat as a mode of sterilization
32. Explain the use of hot air oven and autoclave to control microorganisms
33. What is sterilization? Give a detailed account of radiation as a mode of sterilization
34. Describe sterilization by filtration
35. Explain the membrane filter method
36. Comment on modes of action of antimicrobial agents
37. Define pasteurization .Explain LTH and HTST method of pasteurization
38. Describe use of low temperature to control microorganisms
39. Comment on use of osmotic pressure to control microorganisms
40. What is disinfectant? Elaborate different characteristics of an ideal disinfectants,
41. What is disinfectant? Explain the mechanism of action of phenolics and alcohols.
42. Describe the mechanism of action of Quaternary ammonium compounds as a surface active agents
43. What is gaseous sterilization? Describe the action of different gases used in sterilization
44. Describe the chemotherapeutic agents with respect to mechanism of cell injury
45. What is Phenol Coefficient? How the other disinfectant is compared for efficiency.
46. Describe the classification of chemotherapeutic agents

47. What is symbiosis? Discuss in detail
48. Define endo- symbiosis & what is parasitism?
49. Describe the protist protist interaction with example
50. Describe the Protist-Plant interaction with example
51. Explain Protist-Animal interaction with any one example
52. Describe different types of positive microbial interactions
53. Describe different types of negative microbial interactions

Short Questions (3.5 Marks)

1. Give ray diagram of SEM.
2. What is fluorescence? Give application.
3. Draw the ray diagram of compound microscope
4. What is numerical aperture? Explain the principle and working of oil immersion lens.
5. Define electron microscope, draw ray diagram of TEM.
6. Give the application of electron microscopy.
7. Explain principle of phase contrast microscope.
8. Draw the ray diagram of phase contrast microscope
9. Explain the image formation of Confocal microscope
10. Explain the functions of dark field stop in Dark field Microscope
11. How objective lenses form the image .
12. With suitable diagram explain image formation in compound microscope.
13. What is microscope? Give any three differences between bright field and dark field microscope.
14. Explain the terms magnification and resolution
15. Explain the mechanism of Gram staining.
16. Explain the mechanism of acid fast staining.
17. Give examples of stains used in simple and differential staining
18. What is dye? Explain acidic, basic and neutral dyes with examples
19. Write a note on simple staining
20. Write a note on Gram staining

21. Explain logarithmic growth phase or exponential phase.
22. Explain the working of Chemostat
23. Explain the working of Turbidostat
24. Explain the membrane filter method
25. Comment on modes of action of antimicrobial agents
26. What is Fractional sterilization
27. Describe use of low temperature to control microorganisms
28. How osmotic pressure is used to control microorganisms
29. How radiation is used as a mode of antimicrobial agent ,
30. Explain the use of HEPA filter
31. Explain the principle of Hot air oven and Autoclave
32. Explain Pasteurization as a method to control microorganisms
33. Explain Mechanism of action of action of Halogens as a antimicrobial agent ,
34. Explain Mechanism of oligodynamic action
35. Explain Mechanism of action of Quaternary ammonium compounds,
36. Explain the mechanism of action and applications of ultraviolet rays.
37. Enlist any two examples of Mutualism.
38. Enlist any two examples of parasitism
39. Enlist any two examples of Commensalisms.
40. Enlist any two examples of Predation.
41. What is bioluminescence? Explain bacterial bioluminescence.

Short Questions (2 Marks)

1. Define Microscope
2. What is Condenser?
3. Give the function of ocular lens
4. Define Refractive index. What is refractive index of air
5. Define Numerical aperture
6. What is Resolution limit of compound Microscope?
7. Explain the functions dark field stop in Dark filed Microscope
8. What is dye and stain?

9. Explain chromophore.
10. Explain auxochrome.
11. Explain the use of HEPA filter
12. What Fractional sterilization
13. What is mordant? Explain the types and examples.
14. Give examples of stains used in simple and differential staining
15. What is dye? Explain acidic, basic and neutral dyes with examples
16. Write a note on simple staining
17. Define Simple staining
18. Define Differential staining
19. Enlist different methods of bacterial reproduction
20. Define is generation time
21. Define bacterial growth
22. Enlist the phases of bacterial growth curve
23. Differentiate between conidiophores and sporangiophore
24. Define lag phase of bacterial growth curve
25. Define logarithmic growth phase or exponential phase of growth curve
26. Define stationary phase of growth curve
27. Define death phase of growth curve
28. Draw and label bacterial growth curve
29. Define growth
30. Explain Mesophiles and psychrophiles
31. Explain Thermophiles and thermoduric organisms
32. Define Sterilization and disinfection
33. Define Pasteurization
34. Define Tyndallization
35. How the surface active agent works
36. Define Chemotherapeutic agents
37. Differentiate between Antiseptic and Sanitizer.
38. Differentiate between Germicide and Bactericide
39. What is Aseptic condition

40. Define mutualism
41. Define Commensalism
42. Define synergism
43. Define syntropism,
44. Define parasitism
45. Define predation
46. Define antagonism
47. Define competition
48. What are luminescent bacteria?

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