

Microbe Mission Test

Division C

Captain's Tryouts 2018

Each team is allowed one 8.5"x11" double-sided sheet of paper with notes of any form and two non-programmable, non-graphing calculators. Goggles will not be needed. You will be given 50 minutes to take the test. Tiebreakers are marked. Ties will be broken based on how many points are earned on the tiebreaker questions. Please write legibly.

Name: _____

Score: /80

7. Which of the following do not involve the use of microorganisms? [1]
 - a. Fermentation
 - b. Cheese production
 - c. Alcohol production
 - d. Sewage treatment
 - e. All of the above
 - f. None of the above
8. Which of the following structures is exclusive to animal cells? [1]
 - a. Ribosomes
 - b. Centrioles
 - c. Chloroplasts
 - d. Golgi body
9. Which of the following correctly traces the path of virus replication? [1]
 - a. Attachment, penetration, biosynthesis, maturation, release
 - b. Penetration, attachment, biosynthesis, maturation, release
 - c. Attachment, biosynthesis, penetration, release, maturation
 - d. Maturation, attachment, penetration, biosynthesis, release
 - e. Biosynthesis, attachment, penetration, maturation, release
10. Explain the differences between the structure of Gram positive and Gram negative cells. [2]
11. What is the function of a mordant in cell staining? What is the mordant used in Gram staining? [2]

Tell whether the following are bacteria (B), prion (P), virus (V), protozoan (PR), parasitic worm (W) or fungal (F). [7]

12. Chronic wasting disease _____
13. Malaria _____
14. Zika _____
15. Athlete's foot _____
16. Ringworm _____
17. Cholera _____
18. Mumps _____

Identify the shape of the bacteria. [2]



19. _____



20. _____

21. In the blank space next to questions 19 and 20, sketch streptococci and staphylococci. [4]

22. A patient visits his primary care physician. He complains of itchiness and redness on his feet. What disease does he likely have? What treatment should his doctor recommend? [3]

23. What is the best way to avoid infection by *Giardia lamblia*? [2]

24. At what stage of growth are bacteria more susceptible to false staining? [1] TB

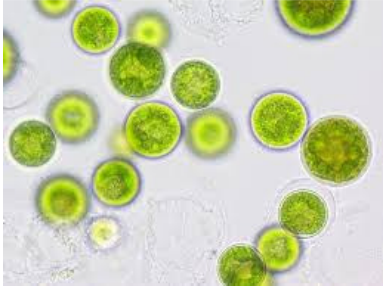
- a. Lag
- b. Log
- c. Stationary
- d. Death
- e. None

25. What is the general term for microorganisms used in cheese processing? [1]

26. Explain the differences between anaerobes, aerobes, and facultative anaerobes.

[3]

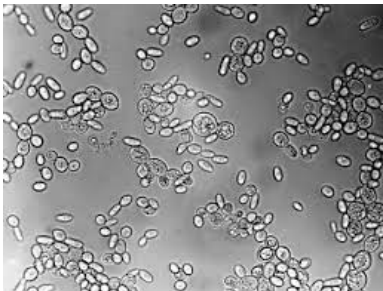
Identify the following as either baker's yeast, algae, amoeba or ciliates. [3]



27. _____



28. _____



29. _____

30. Define the theory of endosymbiosis. Provide three pieces of evidence that support it. [4]

31. By what mechanism does jam preserve fruit? [2] TB

Are the following statements true or false? If false, amend the statement to make it true.

32. Viruses are living organisms. [2]

33. Oil immersion increases magnification. [2]

34. Bacteria are prokaryotic organisms. [2]

35. Protists are eukaryotic organisms. [2]

36. Yeasts are anaerobic. [2]

37. A concern with home-canned foods is the risk of botulism. Describe the two different canning methods commonly used and indicate which is safer and why. [4] TB

What is the general term for microorganisms that thrive in: [4]

38. Salty environments _____

39. -20°C-10°C temperatures _____

40. 41 °C-122°C temperatures _____

41. Nutritionally limited environments _____

Identify the type of microscope used to capture the following micrographs.



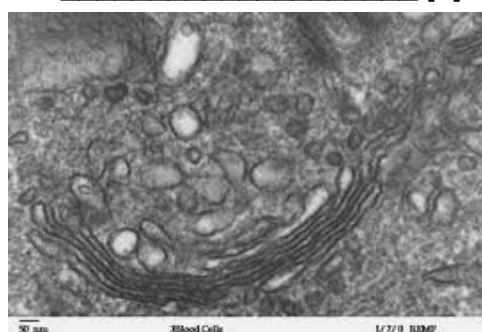
42. _____ [1] TB



43. _____ [1] TB



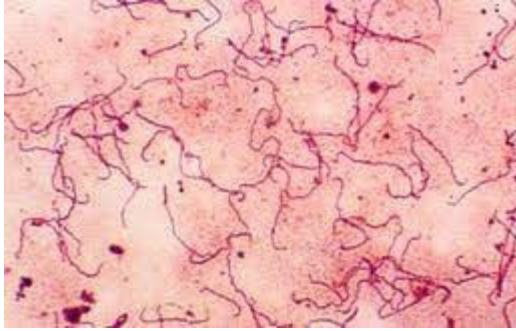
44. _____ [1]



45. _____ [1]

Use the descriptions and the dichotomous key to identify the microorganisms. [4]

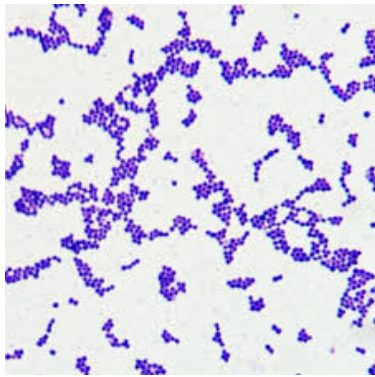
1a. Positive Gram stain	Go to 2
1b. Negative Gram stain	Go to 3
2a. Cocci	Go to 4
2b. Bacillus	<i>Clostridium botulinum</i>
3a. Spirochete	<i>Treponema pallidum</i>
3b. Bacillus	<i>Bordetella pertussis</i>
3c. Vibrio	<i>Vibrio cholerae</i>
4a. streptococci	<i>Streptococcus mutans</i>
4b. staphylococci	<i>Staphylococcus aureus</i>



46. _____



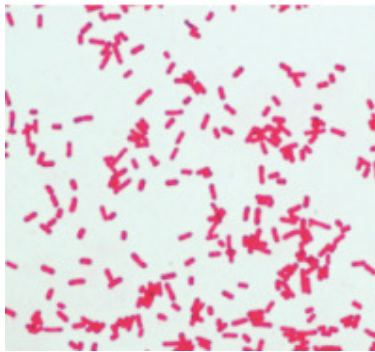
47. _____



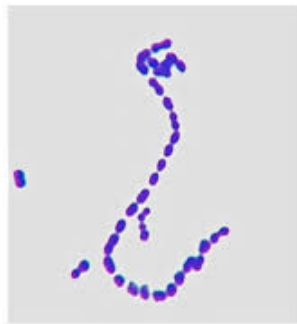
48. _____



49. _____



50. _____



51. _____

53. For each bacterium in the dichotomous key, identify and list the disease from the 2018 disease list it causes. [6] TB