

**Pathogenic Microbiology  
Examination #3  
Fall Semester 2007**

Student name: \_\_\_\_\_

Score: \_\_\_\_\_ points out of 65points

Your percent score is \_\_\_\_\_%

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**Students:**

- 1. Please use a #2 pencil on the scantron sheet.**
  - 2. Each scantron question has a point value of 0.91 points**
  - 3. Record any erasures on the list provided at the front of the room. Protect yourself, as the verdict of the scoring machine is final.**
  - 4. Feel free to ask for further information about any of the questions.**
  - 5. The total value of this portion of the examination is 45.5 points**
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1. There are several factors which work together to determine the resolving power of a microscope. One of those factors is \_\_\_\_.
    - A) The magnification power of the oculars of the microscope
    - B) The wavelength of the illumination used with the microscope
    - C) The refractive index of the condenser
    - D) None of these.
  2. Proteins are large molecules which are constructed from small subunits known as \_\_\_\_.
    - A) Lipases
    - B) Amino acids
    - C) Proteinoids
    - D) None of these
  3. DNA and RNA are both considered to be examples of \_\_\_\_.
    - A) Fatty acids
    - B) Amino acids
    - C) Nucleic acids
    - D) None of these
  4. A cell in which a nuclear membrane was found would be considered to be a \_\_\_\_ cell.
    - A) Mesokaryotic
    - B) Endokaryotic
    - C) Tetrakaryotic
    - D) None of these

5. Membrane transport systems which consume energy as they do their job are considered to be \_\_\_ systems.
- A) Anabolic
  - B) Passive
  - C) Active
  - D) None of these
6. Cell walls in which very large amounts of Peptidoglycan are found would most likely be found in bacteria which are Gram \_\_\_ in nature.
- A) Variable
  - B) Positive
  - C) Negative
  - D) None of these
7. You had the opportunity to view *Treponema pallidum* in laboratory. This is a very famous bacterium in that it is the causative agent of \_\_\_.
- A) Lyme disease
  - B) Leprosy
  - C) Cholera
  - D) None of these
8. If a fluid is sterile, one can say \_\_\_.
- A) It contains no detectable form of life
  - B) It contains no pathogenic microbes but may contain nonpathogens
  - C) It contains no living vegetative microbes but may contain endospores
  - D) None of these
9. Filter sterilization would encounter the greatest problem in achieving its goal with the \_\_\_ of the world.
- A) Fungi
  - B) Bacteria
  - C) Viruses
  - D) None of these
10. Some time was spent dealing with a process known as tyndallization. There are \_\_\_ steps in this process.
- A) 2
  - B) 3
  - C) 4
  - D) None of these
11. The sterilizing agent in the Tyndallization process is \_\_\_.
- A) Gamma radiation
  - B) Ethylene oxide
  - C) Free steam
  - D) None of these.

12. One of the “steps” in the Tyndallization process is a storage phase. This step is aimed at allowing \_\_\_\_.
- A) Mutations to occur in the microbes
  - B) For the germination of endospores
  - C) The penetration of the sterilizing agent
  - D) None of these
13. The use of steam under pressure indicates that one is using the \_\_\_\_ to sterilize materials.
- A) Tyndallizer
  - B) Autoclave
  - C) Sterrad
  - D) None of these
14. Chemicals can be used to sterilize objects. The most common sterilizing chemical agent is currently \_\_\_\_.
- A) Gamma radiation
  - B) Sulfuric acid
  - C) Ethylene oxide
  - D) None of these.
15. Which of the following approaches is the most efficient at killing microorganisms?
- A) Dry heat
  - B) Moist heat
  - C) Rotational heat
  - D) None of these
16. Some time was spent discussing the so-called 12D treatment. This is a process that is used in \_\_\_\_.
- A) Sterilizing hospital operating rooms
  - B) Treating certain canned materials
  - C) Sterilizing moist sensitive materials
  - D) None of these
17. Ultra violet light is characterized by rather \_\_\_\_ penetrating power.
- A) Little
  - B) Marked
18. The mode of action of UV light when it is used in an antimicrobial application involves the \_\_\_\_.
- A) Generation of large numbers of highly reactive ions
  - B) Generation of large amounts of ozone
  - C) Major disruption of the DNA molecule
  - D) None of these

19. Bacterial organisms which can easily grow and infect the human body would be classed as being \_\_\_ in nature.
- A) Psychrophilic
  - B) Thermophilic
  - C) Mesophilic
  - D) None of these
20. Gonorrhoea is considered to be the \_\_\_ most common bacterial cause of STD in the USA.
- A) Second
  - B) Third
  - C) Fourth
  - D) None of these.
21. You had the opportunity to view *Trichomonas vaginalis* in the laboratory (remember the cover of Science). The STD agent is a type of \_\_\_.
- A) Virus
  - B) Fungus
  - C) Algae
  - D) None of these
22. While the above-mentioned organism (#21) may not be familiar to you, it is a very common cause of STD in this country. According to your textbook, about \_\_\_ infections involving this agent occur each year in the USA.
- A) 100,000
  - B) 1,000,000
  - C) 7.5 million
  - D) None of these.
23. The pasteurization of milk is aimed at the destruction of \_\_\_.
- A) The bacterium that causes anthrax
  - B) The bacterium that causes tuberculosis
  - C) The bacterium that causes cholera
  - D) None of these.
24. The modern era of disinfectants has grown from the ground-breaking work of \_\_\_.
- A) Watson
  - B) Loeffler
  - C) Mason
  - D) None of these
25. The individual referred to above (#24) made use of \_\_\_ as his antiseptic
- A) Nitric acid
  - B) Ethyl alcohol
  - C) Phenol
  - D) None of these

26. You were introduced to the concept of the time tape. These materials can be used to determine if an object has been autoclaved. They are based on \_\_\_\_.
- A) Chemicals which can detect the presence or absence of microorganisms
  - B) Chemicals which can kill microorganisms
  - C) Chemicals which are heat sensitive
  - D) None of these
27. Antiseptics are chemical agents which are designed to work on \_\_\_\_.
- A) Nonliving surfaces
  - B) Living surfaces
  - C) Both living and nonliving surfaces
  - D) None of these.
28. If a substance is considered to be fungicidal, it \_\_\_\_.
- A) Will kill fungi
  - B) Will stop fungi from reproducing but will not kill them
  - C) Will stimulate the growth of fungi
29. A short period of time was spent discussing the so-called Sterrad system. This system is a type of chemical sterilizing system and makes use of \_\_\_\_ as the agent of destruction.
- A) Nitrous oxide
  - B) Ethylene glycol
  - C) Hydrogen peroxide
  - D) None of these
30. The system mentioned above operates at temperatures which are \_\_\_\_.
- A) Very high (excess of 200C)
  - B) High, approximately 1000C
  - C) Moderate, approximately 70C
  - D) Low, near room temperature
31. Thermoduric bacteria are those which \_\_\_\_.
- A) Can tolerate high temperatures for brief time periods
  - B) Are killed instantly by high temperatures
  - C) Need high temperatures for proper growth
  - D) None of these
32. Highly efficient enzymes have been mentioned by many people as an explanation for the existence of \_\_\_\_ bacteria.
- A) Thermophilic
  - B) Hydrophilic
  - C) Psychrophilic
  - D) None of these

33. The anaerobic jar achieves its goal by using \_\_\_\_ in a chemical reaction to remove oxygen.
- A) Nitrogen
  - B) Helium
  - C) Hydrogen
  - D) None of these
34. Resazurin is a material incorporated into fluid thioglycollate medium which serves to indicate the level of \_\_\_\_ in the medium.
- A) Hydrogen
  - B) Calcium
  - C) Lithium
  - D) None of these
35. Candle jars have their use in medical microbiology as a means of producing an environment rich in \_\_\_\_.
- A) Water
  - B) Oxygen
  - C) Carbon dioxide
  - D) None of these
36. Which of the following colonies is most likely a “blow in”?
37. *Giardia lamblia* infections normally involve the \_\_\_\_ system.
- A) Circulatory
  - B) Digestive
  - C) Endocrine
  - D) None of these.
38. Cryptosporidiosis is a problem attributed to infection with a particular \_\_\_\_.
- A) Virus
  - B) Protozoan
  - C) Fungi
  - D) None of these

39. The above-mentioned condition is normally acquired by man as a result of \_\_\_\_.
- A) Contaminated vaccines
  - B) Insect bites
  - C) Ingestion of contaminated water
  - D) None of these
40. The idea of the “magic bullet” can be traced to Paul Ehrlich. As was noted in class, this individual did actually manage to create one to treat \_\_\_\_.
- A) Anthrax
  - B) Cholera
  - C) Syphilis
  - D) None of these
41. Some time was spent discussing G. Domagk. This individual was attempting to develop “magic bullets” to treat infections caused by bacteria belonging to the genus, \_\_\_\_.
- A) Micrococcus
  - B) Bacillus
  - C) Streptococcus
  - D) None of these
42. The above-mentioned individual did discover a treatment which ultimately led to the development of that group of antimicrobials known as the \_\_\_\_.
- A) Penicillins
  - B) Sulfa drugs
  - C) Quinolones
  - D) None of these.
43. The first viral disease to be studied involved a problem of \_\_\_\_.
- A) Cattle
  - B) Tobacco plants
  - C) Civets
  - D) None of these
44. The first viral agent that was isolated was found to be constructed mainly of two classes of chemical molecules. These were \_\_\_\_ and \_\_\_\_.
- A) Lipids and proteins
  - B) RNA and DNA
  - C) RNA and protein
  - D) None of these
45. The arrow in the accompanying diagram indicates the \_\_\_\_ of the virus.
- A) Core
  - B) Coat
  - C) Capsomere
  - D) None of these

46. The article dealing with the Chlamydia indicates that between \_\_\_ and \_\_\_ percent of the infected individuals show no signs of infection.
- A) 5 and 10
  - B) 10 and 15
  - C) 15 and 20
  - D) None of these
47. At the present time, treatments of ongoing Chlamydia infections involve the use of \_\_\_\_.
- A) Vaccines
  - B) Antibiotics
  - C) Hypertonic solutions such as concentrated salt solutions
  - D) None of these
48. Chlamydial infections usually induce very \_\_\_ immunity on the part of the human body.
- A) Short lived
  - B) Long lived
49. According to the article, chlamydial infections lead to body primarily \_\_\_\_.
- A) The production of toxins or poisons
  - B) The actual destruction of large amount of nervous tissue
  - C) Long term body of inflammation
  - D) None of these
50. **Mark answer A. This is a “free” question.**

**Students:**

- 1. The following portion of the examination has a point value of 19.5 points.**
- 2. Each question has its point value indicated at its end.**
- 3. You may use either pencil or pen in answering this section of the examination.**
- 4. If you are to list items, for your own protection, list only the number that is being requested.**
- 5. Please use complete sentences where appropriate**
- 6. Please print the wording of your answer.**
- 7. Lastly, reread your answers before turning in your paper. Remember, I can only read and grade what you have actually written, not what you wanted to write.**

1. Describe the Tyndallization process and explain what is projected to occur in each of the steps. **(3pts)**

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2. What were the 3 major ways that heat can be employed to sterilize objects? **(1.5pts)**

1.
2.
3.

3. What are the 3 cardinal temperatures that any bacterial organism would show or exhibit? Define each of the temperatures. **(3pts)**

<b>Temperature</b>	<b>Definition</b>
1.	
2.	
3.	

4. You were introduced to 2 different reasons for checking before autoclaving an object or material that you have never seen before. What were those reasons? **(2pts)**

1.	
2.	

5. Bacterial organisms can be subdivided into 3 major groups based on oxygen and their metabolism. What are those groups? Define each. **(3pts)**

<b>Group</b>	<b>Definition</b>
1.	
2.	
3.	

6. Cite 3 colony characteristics that could be used to identify colonies of different bacterial species. **(3pts)**

1.
2.
3.

7. Many of the early studies of what are now recognized as being viral diseases were hampered by two distinctive characteristics of these agents. What were these two characteristics? **(2pts)**

1. These agents
2. These agents

8. The article dealing with the Chlamydia indicated some 5 general approaches that are currently being studied to “handle” Chlamydia infections. Cite 2 of these approaches. **(2pts)**

1.
2.