

**General Microbiology
Examination #4
Winter Semester 2007**

Student name: _____

Score: _____ points out of 65points

Your percent score is _____%

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. The sterilizing device known as the autoclave makes use of ____ to do its job.
 - A) Dry heat
 - B) Isothermic heat
 - C) Moist heat
 - D) None of these.

2. One of the situations in which you would expect to see a significant LAG phase if one was conducting a growth curve studies would be ____.
 - A) In a situation where you were cultivating an endospore forming bacterium
 - B) If you transferred your culture from medium A to medium B
 - C) If you were attempting to cultivate a mesophilic bacterium
 - D) None of these

3. Which of the following diagrams best describes the process of binary fission?
 - A) B)

 - C) D)

4. The two so-called light reaction products in the process of photosynthesis are ____.
- A) Carbon dioxide and ribulose biphosphate
 - B) ATP and Carbon dioxide
 - C) ATP and water
 - D) None of these
5. The chemiosmotic theory is an attempt to explain the production of ____.
- A) Glucose
 - B) ATP
 - C) Cellulose
 - D) None of these.
6. You would expect to find an outer membrane in the Gram ____ cell.
- A) Positive
 - B) Negative
 - C) Isometric
 - D) None of these
7. In the laboratory, you tried to induce a very specific mutation by the use of UV light in a bacterium by the name of ____.
- A) *E. coli*
 - B) *Enterobacter aerogenes*
 - C) *Serratia marcesens*
 - D) None of these.
8. Silent mutations involve ____.
- A) Genetic changes that cause no major deleterious effects in the bacterial cell
 - B) Genetic changes that cause no changes in the protein molecules produced by the cell.
 - C) Genetic changes which are lethal to the cell
 - D) None of these.
9. Usually changes in the nitrogenous base sequence in a gene will lead to changes in the ____.
- A) Amino acid sequences in proteins
 - B) Nitrogenous base sequence in proteins
 - C) Nitrogenous base sequence in the nucleotides
 - D) None of these.

10. The antibiotic sensitivity testing that you did in the laboratory would be considered to be ____.
- A) In vitro
 - B) In vivo
 - C) In Vidium
 - D) None of these
11. The adult form of the Ascaris parasite lives in the ____ system of man.
- A) Respiratory
 - B) Excretory
 - C) Circulatory
 - D) None of these
12. The hookworm gains entry to the human body by ____.
- A) Having its eggs eaten by man
 - B) Being placed into man by the action of a mosquito as it feeds
 - C) Burrowing through the skin of the body
 - D) None of these.
13. The first viral disease studied by man involved a disease of ____.
- A) Sheep
 - B) Tobacco plants
 - C) Potato plants
 - D) None of these
14. What area of a typical virus is indicated by the arrow in the diagram shown below?
- A) The core
 - B) The coat
 - C) The envelope
 - D) None of these.
15. Which of the following processes is involved in the exit of a virus from an infected cell?
- A) Budding
 - B) Fragmentation
 - C) Fusion
 - D) None of these.
16. The two major groups of chemical substances that are found in association with viral particles are ____.
- A) Lipids and proteins
 - B) Proteins and nucleic acids
 - C) Lipids and carbohydrates
 - D) None of these

17. In the process of bacterial conjugation, there is a requirement for ____.
- A) The presence of a lytic phage
 - B) The cells involved to actually come into contact with each other
 - C) The absence of cell walls
 - D) None of these.
18. In both the conjugation and transduction laboratories, the genetic traits that were being moved from one cell to another involved ____.
- A) Pilus production
 - B) The ability for the bacteria to utilize oxygen
 - C) Antibiotic resistance
 - D) None of these.
19. You could determine if transduction occurred ____.
- A) By examining the bacteria involved under the microscope
 - B) By utilizing ultra violet light
 - C) By looking for growth on Ampicillin containing agar
 - D) None of these.
20. A plaque is really ____.
- A) A very virulent virus
 - B) A virus induced hole in a lawn of bacteria
 - C) Another name for a mutated bacterium
 - D) None of these.
21. The pasteurization of milk is aimed at the destruction of ____.
- A) All disease causing microbes
 - B) The bacterium which causes cholera
 - C) The bacterium which causes botulism
 - D) None of these.
22. The modern era of disinfectants began with the work of ____.
- A) Franz
 - B) Watson
 - C) Williams
 - D) None of these.
23. The above-mentioned individual made use of the chemical ____ in his groundbreaking work and observations.
- A) Nitrogen dioxide
 - B) Calcium chloride
 - C) Phenol
 - D) None of these

24. A disinfectant, which is described as being fungicidal, should be able to ____.
- A) Kill fungi
 - B) Stop them from reproducing but not kill them
 - C) Kill all fungi and stop all other microbes from reproducing
 - D) None of these
25. Disinfectants are designed to be used on ____.
- A) Nonliving surfaces
 - B) Living surfaces with the exception of the eyes
 - C) All living surfaces
 - D) None of these.
26. The adult form of *Enterobius vermicularis* lives in the human ____ system.
- A) Circulatory
 - B) Nervous
 - C) Respiratory
 - D) None of these.
27. If you were engaged in the process of phage typing to identify a bacterial species or strain, you would be looking for ____.
- A) Agglutination reactions
 - B) The Gram reaction of the phages used in your work
 - C) The production of plaques
 - D) None of these.
28. One of the uses for genomic studies is in attempts to identify bacterial species. In this approach you would make use of ____ in the identification procedure.
- A) Amino acid sequences
 - B) Nitrogenous base sequences
 - C) Fatty acid production
 - D) None of these.
29. A positive hydrogen sulfide (H₂S) test results in the production of a ____ color in the test medium.
- A) Red
 - B) Green
 - C) Black
 - D) None of these.
30. Which of the following amino acids plays the central role in the indole test?
- A) Glycine
 - B) Alanine
 - C) Phenylalanine
 - D) None of these

31. The positive indole test is indicated by the development of a ___ color in the test medium after the reagent is added.
- A) Yellow
 - B) Red
 - C) Blue
 - D) None of these.
32. Both the hydrogen sulfide and indole are run using ___ medium.
- A) EMB agar
 - B) Azo medium
 - C) SIM
 - D) None of these.
33. Your attention was called to the chemical make up of Simmon's Citrate agar because it is the only so-called ___ medium that you will make use of all semester long.
- A) Differential
 - B) Enriched
 - C) Defined
 - D) None of these.
34. The above-mentioned medium is known both ___ and ___ in terms of its chemical make up.
- A) Qualitatively and Quantitatively
 - B) Quantitatively and isotopically
 - C) Qualitatively and Numerically
 - D) None of these
35. Some time was spent discussing the influenza strain that has been designated H5N1. This influenza strain currently infects ___ for the most part.
- A) Humans
 - B) Birds
 - C) Monkeys
 - D) None of these.
36. Viroids appear to be ____.
- A) Small protein molecules
 - B) Small DNA molecules
 - C) Small RNA molecules
 - D) None of these

37. At the present time, viroids are known to infect ____.
- A) Only invertebrate animals
 - B) Only higher plants
 - C) Only fungi
 - D) None of these.
38. Some time was spent discussing the production of interferon molecules. These molecules are produced by ____.
- A) Viral infected cells
 - B) Cells which are not infected with viruses but are close to cells which are
 - C) Viral infected cells which have controlled their infection
 - D) None of these.
39. You were introduced to a class of enzymes found in bacterial cells and which can be used to defend the cell against invading viral organisms. These enzymes are called ____.
- A) Restriction endonucleases
 - B) Gyrases
 - C) Helicases
 - D) None of these.
40. A cell has been invaded by a virus and has undergone transformation. This means that the cell ____.
- A) Will lyse
 - B) Will become cancerous
 - C) Will undergo transdetermination
 - D) None of these.
41. According to the article on biofilms, the first person to describe this phenomenon was ____.
- A) J. Lister
 - B) A. Leeuwenhoek
 - C) J. D. Watson
 - D) None of these.
42. Bacteria that do not live within a biofilm were described as being ____ forms by the authors of the biofilm article.
- A) Planktonic
 - B) Inversive
 - C) Autotrophic
 - D) None of these

43. A bit of time was spent discussing biofilms involving *Pseudomonas* infections of the lungs in individuals who have ____.
- A) AIDS
 - B) Cystic fibrosis
 - C) Aortic stenosis
 - D) None of these
44. One of the major components of a matrix of a biofilm is ____.
- A) Agar
 - B) Chitin
 - C) Cellulose
 - D) None of these.
45. According to the article on biofilms, the CDC estimates that about ____ infections in the Western World involve biofilms.
- A) 5%
 - B) 20%
 - C) 50%
 - D) None of these.
46. In the case of malaria, the sexual phase of this parasites life cycle occurs in ____.
- A) Man
 - B) Mosquito
 - C) Pig
 - D) None of these.
47. When we humans are infected in the normal manner by the malaria parasite, we are exposed to the ____ stage in the life cycle of the parasite.
- A) Sporozoite
 - B) Merozoite
 - C) Oocyst
 - D) None of these.
48. The microslide entitled, Animal Parasites of man gave you the opportunity to view the organism that causes African sleeping sickness. This parasite is really a protozoan, which belongs to a group known as the ____.
- A) Sporozoans
 - B) Amoeba
 - C) Trypanosomes
 - D) None of these.

49. When you examined a microslide dealing with the parasites of man, you were introduced to a parasite, which gains entry to our body by penetrating our skin. This parasite was the ____.

- A) Pinworm
- B) Ascaris worm
- C) Hookworm
- 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 your answers.**
- 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. There were 8 steps in the replication of viruses that were noted in class. List each of these steps. **Note, you do not have to list these steps in order. (4pts)**

1.	5.
2.	6.
3.	7.
4.	8.

2. An antibiotic may look like it will be quite useful in a clinical setting based on the type of testing that you conducted in the laboratory and turn out to be useless when tested in man. Cite 2 major classes of reasons for this. **(2pts)**

1.
2.

3. In conducting the MPN procedure, you were introduced to 3 “levels” of testing that water is put through to determine its microbial safety. What were those levels or procedures? **(1.5pts)**

1.
2.
3.

4. You have been given a solution that you have never seen before and asked to run it through the autoclave to sterilize it. Cite 2 general classes of reasons for asking for additional information or checking with a knowledgeable individual before carrying out this request. **(2pts)**

1.
2.

5. You were introduced to 3 general means by which viral organisms can be grown or cultivated. What were those approaches? **(3pts)**

1.
2.
3.

6. You were introduced to several means (beyond the use of the microscope and biochemical testing) that can be used to identify microbial forms of life. Cite 3 of those methods. **(3pts)**

1.
2.
3.

7. Some time was spent discussing H5N1 or the bird flu virus. In the H and N system, what do the letters H and N stand for? What do the numbers stand for? **(3pts)**

H stands for
N stands for

The numbers (5, 1) stand for

8. Biofilms confer several forms of protection on the bacteria, which live within them. Cite 2 kinds of protection that bacterial cells get if they live within a biofilm. **(1pt)**

1.
2.