Exam 1, Micr-22, C. Briggs, ver 9.14 (scaled to 100pts) Name: _____

Tip: Answer the questions you know first. At least guess on everything before you turn this in.
Words, drawings, charts – all are welcome.

1. Please write a properly-formatted species name. 1pt

2. Please match the following individuals to their major microbiological contribution. 6pts

A. Antonie van Leeuwenhoek
B. Edward Jenner
C. Francesco Redi
D. Lazzaro Spallanzani
E. Louis Pasteur
F. Robert Koch
G. Lady Mary Wortley Montague

____ Challenged idea of spontaneous generation by showing that maggots from fly eggs.

____ Helped popularize smallpox variolation.

____ Improved microscopes, one of first to observe microorganisms.

____ Challenged idea of spontaneous generation by showing that boiled and long-necked containers did not grow microbes.

____ Challenged idea of spontaneous generation by showing that boiled and sealed containers did not grow microbes.

____ Helped develop the smallpox vaccine.

____ Developed rules to determine the causes of particular infectious diseases.

3. Name two emerging diseases. 2pts

4. What are two reasons that diseases are still emerging? 2pts

5. Please identify a major benefit and a major drawback / cost of using the following types of microscope or stain. 4pts

	Benefit	Drawback / Cost
(a) Fluorescence		
(b) Gram stain		
(c) Brightfield		
(d) Scanning electron		

6. What is a difference between a simple stain and a differential stain? 1pt

7. For the following structures, please indicate whether this can be found in a prokaryotic cell ("pro"), in a eukaryotic cell ("euk"), or in both ("both"). 5pts

_____ DNA
_____ RNA
_____ Ribosomes
_____ Nucleus
_____ Rotating flagella
_____ Enzymes
_____ Peptidoglycan
_____ Rough endoplasmic reticulum
_____ Plasma membrane
_____ Cell wall

8. Please draw a quick sketch of the following (3pts):

(a) a bacterium with lophotrichous flagella

(b) bacteria with a staphylobacillus arrangement

(c) a vibrio bacterium

9. How is group translocation different from normal diffusion? 2pts

10. What led people to develop the endosymbiotic theory to explain the origin of mitochondria and chloroplasts? Please list four pieces of evidence. 4pts

11. Please name the three Domains of living things. 3pts

12. What is one way that you could distinguish between Archaea and Bacteria? 1pt

13. Several methods of classification use "known" substances to identify unknown bacteria. List, as specifically as you can, what these "known" substances are for the following methods: 3pts

Serology	known =
Phage typing	known =
Nucleic acid hybridization	known =

14. What is a dichotomous key? 1pt

15. Please match these terms to their brief description. 10pts

A. nosocomial infection
B. communicable disease
C. noncommunicable disease
D. endemic
E. epidemic
F. pandemic
G. infection
H. pathogenesis
I. opportunistic infection
J. prodromal period
K. incubation period

____ Time between the initial infection and the appearance of symptoms.

____ The manner of development of a disease.

____ Time between the appearance of symptoms and the full development of an illness.

____ Regularly found among particular people or in a certain area.

____ Any disease transmitted from one organism to another.

____ A widespread occurrence of an infectious disease over a whole country or the world.

____ The growth of microorganisms in the body.

____ A widespread occurrence of an infectious disease in a community at a particular time.

____ Infection acquired in hospital or healthcare facility.

____ Any disease that cannot be transmitted from one person to another.

____ An infection that takes advantage of situations such as a weakened immune system.

16. What are normal microbiota? 1pt

17. Please match these terms to their brief description. 4pts

A. mutualism
B. commensalism
C. parasitism
D. microbial antagonism / competitive exclusion

____ A symbiosis where one group benefits and the other is not affected.

____ A symbiosis where one organism benefits and the other experiences a cost.

____ A process where one microorganism inhibits or prevents the growth of another.

____ A symbiosis where both groups benefit.

18. Which of the following is *not* one of Koch's postulates? 1pt

(a) The same pathogen must be present in every case of the disease.
(b) The pathogen must be isolated and grown in pure culture from the diseased host.
(c) The disease must be transmitted from a diseased animal to a healthy, susceptible animal by some form of direct contact between animals.

19. When are Koch's postulates not useful? Give two distinct examples. 2pts

20. Match these pathogens with the major diseases with which they are associated. 4pts

A. Escherichia coli
B. Pseudomonas aeruginosa
C. Staphylococcus aureus
D. Candida albicans
E. Streptococcus pyogenes

____ Pneumonia, UTI, skin + soft tissue infections, blood infections

____ Candidiasis, thrush, yeast infection

____ Scarlet fever, strep throat, GAS, impetigo, toxic shock syndrome

____ MRSA, VISA, VRSA, food poisoning, impetigo, toxic shock syndrome

____ GI disease (diarrhea, dysentery), UTIs, meningitis, respiratory tract infection, STEC, ETEC, EPEC

21. If you were designing a drug to kill bacteria living inside people, what target would you choose within the bacterial cell? Why? 2pts