Microbiology
Unit 1 Test Review

Name: KEY Date: _____ Hour: _____ Test #: _____

1. Define the following terms:
   a. Microbiology: Study of living organisms that are individually too small to be seen with the unaided eye
   b. Biogenesis: living organisms come from other living organisms
   c. Abiogenesis: the theory that living organisms arose from nonliving materials upon decomposition
   d. Prokaryotic Cell: simple cells with no true nucleus, DNA is not separated from cytoplasm by nuclear membrane
   e. Eukaryotic Cell: cells with a true, membrane bound nucleus and other membrane bound organelles
   f. Coccus: spherical
   g. Bacillus: cylindrical or rod-shaped
   h. Spirilla: spiral

   Identify examples
   i. Medical Microbiology: study of microbes that cause disease in humans and other animals
   j. Agricultural Microbiology: study of microbes that either harm or benefit agricultural production
   k. Industrial Microbiology: Study of commercial products of microbial activities
   l. Immunology: study of mechanisms of resistance to microbial disease

2. What was the purpose of Francesco Redi's experiment? disprove abiogenesis
   a. Hypothesis: Rotting meat will not turn into maggots or flies
   b. Briefly describe Redi's experiments: ① 4 open jars and 4 sealed jars each with meat ② Faulty due to 2 experimental factors so 2nd experiment 4 open jars and 4 jars covered with gauze each with meat
   c. What was Redi's conclusion? Flies produce maggots from eggs laid in the open jars
3. Who is John Needham? English scientist whose experiments supported abiogenesis
   a. Describe Neeham's experiment. Different broths boiled for a FEW minutes, open flasks were cooled to room T° and then loosely sealed. After a few days Needham viewed the broths and saw microbes

b. What were the flaws with Needham's experiment? broth was not boiled long enough, were not tightly sealed

4. Who is Lazzaro Spallanzani? italian scientist and biogenesis supporter who tried to disprove Needham's conclusions
   a. Describe Spallanzani's first experiment. Boiled sealed flasks for one hour, after several days microscopic examination showed no microbes in the broth
   b. Describe Spallanzani's second experiment. 4 sets of flasks boiled at different time intervals, flasks were left loosely sealed so microbes could enter from the air
   c. What did Spallanzani conclude? Found more microbes in the flasks boiled longest bc it removed H_2O and enriched food
5. Who is Louis Pasteur? French chemist whose experiments completely disproved spontaneous generation of all organisms
   a. Describe Pasteur's first experiment. sealed flasks were boiled long enough to kill microbes. Flasks were opened in different areas where the amt. of dust varied. conclusion - dustier areas showed more microbial growth
   b. Describe Pasteur's second experiment. Broth was placed in flasks with different shaped necks. Flasks were boiled and cooled. If dust could fall into the broth microbes grew. if dust could not enter curved neck, no microbe grew
6. What significance did Anton van Leeuwenhoek have? First reported to observe microbes and gave accurate drawings/descriptions
   a. Briefly describe Leeuwenhoek's accomplishments. produced over 250 microscopes, described/drew microbes from rainwater, saliva, vinegar tartar from teeth and called what he saw animalcules
7. What do Koch's Postulates state?
   a. The disease microbe must be present in all sick animals and not in healthy animals.
   b. The disease microbe must be found in and removed from a sick animal and grown in pure culture in a lab.
   c. If a healthy animal is inoculated with the lab culture of disease microbe the animal must contract the disease.
   d. The disease microbe must be found in and removed from the experimentally infected animal and compared to the microbe from the first sick animal. They must be the same.

8. Describe each of the following:
   a. Kingdom ~~Monera~~ Eubacteria
      i. Bacteria: unicellular, ubiquitous, major cause of human disease used for research because their life processes are similar to other living organisms
      ii. Cyanobacteria: unicellular, aquatic, perform photosynthesis may form heterocysts
   b. Kingdom Protista
      i. Protozoans: wide variety of shapes and sizes, 5um to 2mm in size, reproduce both sexually and asexually
   c. Kingdom Fungi
      i. Yeasts: reproduce by budding or sporulation, ferment carbohydrates into ethyl alcohol, produce CO_2 during fermentation making bread rise, few cause disease
      ii. Molds: multicellular fungi, more complex than yeast, branching hair-like growths, form both sexual and asexual spores