You should be able to find the information necessary to answer these questions in Tortora, Funke, and Case, or in lecture. However, for a fuller understanding of the concept, or to add more detail to your answer you are encouraged to use other sources (see on-line resources by chapter)

1) What makes sourdough sour? What is name the organism that is responsible for making sourdough sour. Which type of microbe is it? Which metabolic process is responsible for the sour taste and what chemical end product is detected by the taste buds as ‘sour’?

2) Explain why viruses are not classified in any of the same categories as any of the other groups of microbes. Are viruses living or non-living?

3) Name the 3 domains of life identified by Carl Woese in 1978. What characteristics did he use (and are still used today) to distinguish the three domains?

4) List and briefly describe 5 different types of organisms that are generally referred to as ‘microbes’?
5) Who established the system of nomenclature used to name organisms? Provide an example of a correctly written scientific name for a bacterium of your choice. Indicate the Genus name and the species name. Explain the protocol for when, and how a scientific name be abbreviated without losing effectiveness.

6) Who was the first person to observe microorganisms with a microscope?

7) List and summarize the basic principles of cell theory, and name each scientist who contributed to the theory. [lecture]

8) Describe the theories of spontaneous generation, and the of biogenesis. Describe the three early experiment performed before 1858, which theory was supported by the results of each experiment?

9) Briefly explain how Louis Pasteur’s experiments disproved the prevailing theory of spontaneous generation. Illustrate your answer with a diagram of his experimental setup.
10) Describe Koch’s four postulates and their purpose in modern medicine.

11) What are the exceptions to Koch’s postulates?

12) Describe the Germ Theory of disease. What was believed to be the cause of disease before germ theory?

13) Discuss the hypothesis developed by Ignaz Semmelweis following observations made while working in an obstetrics ward in 19th century Austria. Describe how he tested his hypothesis, what were the results of his experiment, and describe how these insights are still in use today. [lecture]

14) Discuss how Joseph Lister applied germ theory to medical procedures and how his insights are still used in medicine today.
15) Describe the observation made by Edward Jenner in 1796 regarding immunity of milkmaids to smallpox and describe how he applied this knowledge in the first successful vaccination trial.

16) Briefly describe how Alexander Fleming ‘discovered’ Penicillin, and how did he recognize it as an antibiotic.

17) What is your normal microbiota, and describe how we benefit from their presence in and on our bodies.

18) What is the distinction between health and disease?
Grids- Use the indicated sections of your textbook to fill in the blanks to complete each grid

### Microbe Diversity Grid

<table>
<thead>
<tr>
<th>Type of Microorganism</th>
<th>Description</th>
<th>Examples</th>
<th>Domain</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Archaea</strong></td>
<td>Single cells; cell walls of peptidoglycan</td>
<td><em>Streptococcus</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nucleated cell, single or multicellular; cell wall of chitin</td>
<td><em>Halobacterium</em></td>
<td>Eukarya</td>
</tr>
<tr>
<td><strong>Protozoa</strong></td>
<td>Unicellular, nucleated cells, unicellular or colonial, cell wall of cellulose, photosynthetic metabolism</td>
<td><em>Volvox</em></td>
<td></td>
</tr>
</tbody>
</table>

### Who’s Who Grid

<table>
<thead>
<tr>
<th>Old Dead White European Male</th>
<th>Year of Discovery</th>
<th>Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1665</td>
<td>First to observe and name cells</td>
<td></td>
</tr>
<tr>
<td>Francesco Redi</td>
<td>1668</td>
<td>First to observe microbes</td>
</tr>
<tr>
<td>1673-1723</td>
<td></td>
<td>Theory of biogenesis</td>
</tr>
<tr>
<td>Louis Pasteur</td>
<td>1858</td>
<td>Introduced aseptic techniques in surgery</td>
</tr>
<tr>
<td>1861</td>
<td></td>
<td>Discovered causative agent</td>
</tr>
</tbody>
</table>

_A Brief History of Microbiology_
### Chapter 1 - The Microbial World and You

<table>
<thead>
<tr>
<th></th>
<th>of Anthrax, Bacillus anthracis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edward Jenner</td>
<td></td>
</tr>
<tr>
<td>Alexander Flemming</td>
<td>1928</td>
</tr>
<tr>
<td></td>
<td>Discovered Penicillin</td>
</tr>
</tbody>
</table>

Time Magazine Article about Alexander Fleming -
[http://www.time.com/time/time100/scientist/profile/fleming.html](http://www.time.com/time/time100/scientist/profile/fleming.html)

Biography of Edward Jenner -
[http://www.zephyrus.co.uk/edwardjenner.html](http://www.zephyrus.co.uk/edwardjenner.html)

Engines of Ingenuity - Ignaz Semmelweis -
[http://www.uh.edu/engines/epi622.htm](http://www.uh.edu/engines/epi622.htm)

About.com: Inventors - Semmelweis and Lister -