

## Quiz #4 Key – 1:00 lab

### 1. Define:

**Chemoautotroph** – Chemoautotrophs are organisms capable of using chemicals as their energy source, and inorganic compounds for carbon. All chemoautotrophs are categorized within the domains Bacteria and Archaea, and they are sometimes called lithotrophs (rock consumers).

**Thermophilic** – Organisms capable of surviving exposure to high temperatures are thermophilic. These organisms do not grow under such conditions, but remain viable. Endospores are thermophilic, which is why the pasteurization procedure applied in the laboratory allowed us to grow *Bacillus*. The endospores survived a one-minute exposure to boiling water.

**Bioluminescence** – Bioluminescent organisms are those capable of producing light. They do this using enzymes, e.g., luciferase, and other molecules, e.g., luciferins, that interact to convert chemical energy into light energy.

### 2. Order

3. Protista/ The kingdom Monera is no longer valid because it included all prokaryotic organisms, and the work of Carl Woese and his associates demonstrated that the Bacteria and Archaea are so unlike one another that they are now placed into two different domains.

### 4. Parasite

### 5. Obligately aerobic/ respiratory

### 6. Thermoacidophiles

### 7. Serological/ viruses called bacteriophages

8. Archaea/ The Archaea have cell membrane lipids unlike those found within other cells. Their glycerol molecules are mirror images of those found within bacteria and eukaryotic cells, and they bind with long chain lipids (isoprene chains) through ether-linkages. Archaea have 16S ribosomal-RNA nucleotide sequences unlike those found in bacteria, and often have histone proteins and introns (which most bacteria do not).

### 9. Bacteriorhodopsin

### 10. Matching letter sequence is – E, F, J, I, C, D, A, G, H and B.

The etiological agents of leprosy are identified as *Mycobacterium leprae*.