Quiz #4 Key – 7:45 lab

1. Define:

Photoheterotroph – Photoheterotrophs are organisms capable of using light as their energy source, but require preformed organic compounds for carbon. All photoheterotrophs are categorized within the domains Bacteria and Archaea.

Psychroduric – Organisms capable of surviving periods of very cold temperatures are psychroduric. These organisms do not grow under such conditions, but remain viable. Most bacteria are psychroduric, and are typically stored in freezers with temperatures ranging from -70 to -90^{o} C.

Bioremediation – Bioremediation is the process of removing toxins or other chemicals from the environment through the application of living organisms (usually microbes). Because many bacteria and fungi are capable of using such a wide range of different organic compounds as carbon and energy sources, they are often used to remove petroleum spills and other types of pollution from soil and water. Bioremediation is essentially environmental clean-up.

2. Phylum

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 Protista/ The kingdom Monera is no longer valid because it included all prokaryotic organisms, and the work of Carl Woese and his associates demonstrated that the Bacteria and Archaea are so unlike one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. Hypotrophs

5. Obligate anaerobes/ fermentative

6. Halophile

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. Luciferase

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

The etiological agents of botulism are identified as *Clostridium botulinum*.