1. Matching for (1) to (15). (From the list below) **(30%)**

A: *Thermus aquaticus*	**B:** symbiosis	**C:**16S
D: spread plating	**E:** pour plating	**F:** ether
G: facultative	**H:** hydrogen	**I:** H_2O_2
J: magnetosome	**K:**Kovacs reagent	**L:** green S
M:MPN	**N:** Proteobacteria	**O:**23S
P:Southern blot	**Q:** cometabolism	S:bacterial cells

1-(1) ____ ribosome subunit usually used for phylogenetic analysis
1-(2) ____ viable counting technique that uses petri plates
1-(3) ____ electron donor provided by protozoa to endosymbiotic methane producers
1-(4) ____ any intimate relationship between two populations
1-(5) ____ largest and most physiologically diverse group of bacteria
1-(6) ____ hybridization of DNA transferred from an electrophoretic gel
1-(7) ____ species whose DNA polymerase is often used in PCR
1-(8) ____ obligate photosynthetic anoxygenic bacterium
1-(9) ____ chemical bond found in Archaea cytoplasmic membranes
1-(10) ____ process in which an organism transforms a compound that it does not use
1-(11) ____ aerobe that can also live as an anaerobe
1-(12) ____ allows bacteria to move in the direction of a magnetic field
1-(13) ____ Bacteriophages use this as their "growth medium".
1-(14) ____ The catalase test invplves an enzyme which is important in the breakdown of this compounds.
1-(15) ____ Reagent used in the indol test.

2. What is it about the difference in the cell wall of gram negative and gram positive bacteria. **(10%)**
3. Why do batch culture of microorganisms enter a stationary phase and a death phase following logarithmic growth. Discuss. **(10%)**
4. What means "FISH" in the context of microbial biology? **(10%)**
5. Why are organic degradation kinetics in sediments usually first order, while kinetics in water samples are usually mixed order? **(10%)**
6. Why is it important that microorganisms are usually much smaller than eucaryotic cells? **(10%)**
7. Describe how electron flow in fermentation differs from respiration. ? **(5%)**
8. What are the three general phenotypes found in Archaea? ? **(5%)**
9. What is the function of promoter? **(5%)**
10. All organisms need NAD(P)H. Why? **(5%)**