

### **TSI test**

1. Why does the TSI slant contain only a small amount of glucose but a larger amount of sucrose and lactose?
2. What would an acid slant and an acid butt indicate about the bacteria you are testing?
3. What would an alkaline slant and an acid butt indicate about the bacteria you are testing?
4. What would an alkaline slant and an alkaline butt indicate about the bacteria you are testing?
5. What does a black precipitate indicate about the bacteria you are testing? Why does this black precipitate form?
6. What does cracks in the agar or lifting up of the agar indicate about the bacteria you are testing?

### **IMViC tests**

1. What does a positive Indole test indicate about the bacteria you are testing? How does the indole test work?
2. What does a positive Methyl Red test indicate about the bacteria you are testing? How does the Methyl Red test work?
3. What does a positive Voges-Proskauer test indicate about the bacteria you are testing? How does the Voges-Proskauer test work?
4. Explain why a positive Methyl Red test predicts a negative Voges-Proskauer test, and vice versa.
5. What does a positive citrate test indicate about the bacteria you are testing? How does the citrate test work? Explain why the simmon's citrate agar must be a chemically defined media, rather than a complex media.

### **Catalase test**

1. What reaction is catalyzed by catalase when hydrogen peroxide is added to the culture on the TSA slant?
2. Why do some bacteria express catalase? Why would you expect to see that obligate aerobes express catalase but not obligate anaerobes?

### **Oxidase test**

1. What does a positive oxidase test indicate about the metabolism of the bacteria being tested?  
What does a positive oxidase test indicate about the oxygen requirements of the bacteria being tested?
2. How does the oxidase test work to reveal that cytochrome c oxidase is being produced by the bacteria being tested?

### **Coagulase/DNase test**

1. How does the enzyme coagulase function and why would a bacterium express this enzyme? In the coagulase test, how do you test for presence of this enzyme?
2. False-positive coagulase tests have been reported for some bacteria that can utilize citrate. Explain why this would happen.
3. How does the enzyme DNase function?
4. Why is 1M HCl added to the DNase test agar plate? How does this allow you to determine if the bacterium produces the DNase enzyme?