# Bacteria Test – Study Guide:

# Structural characteristics of bacteria – Prokaryotic cell, single chromosome, plasmids, peptidoglycan cell wall, capsule, pili, endospores, lack of organelles.

**Reproduction** (Binary fission) NOTE! This is different from genetic exchange!

 (Conjugation is the closest bacteria get to sexual reproduction.)

**Genetic exchange/recombination**: (Transduction, Transformation, Conjugation.

**Growth requirements of bacteria** – heat, warmth, moisture, food

 Compare to methods of food preservation.

**Methods to identify bacteria**:

 Shape and arrangement

 Diversity of metabolism – anaerobic vs aerobic.

 Food Source/requirement

Gram Staining - relate to the production of endotoxins.

Endospore Production – examples of bacteria that produce endospores

**Endo- vs. Exo- toxins**: examples and basic differences

**How do bacteria cause illness**?: Transmission, Colonization and growth and

 invasion of tissue.

**Antibiotics and antibiotic resistance**

What is an antibiotic?

Why do antibiotics kill bacteria? Give some examples.

How does antibiotic resistance come about in our efforts to combat disease? – Your must include the idea of natural selection!

**What is DOT** and how does this attempt to avoid Antibiotic resistance

**Proper binomial nomenclature** for scientific names

 Genus species: Homo sapiens or: *Homo sapiens*

**SEE: Problem and Short answer questions below:**

**Problem**

 25. i. Identify each of the processes below and describe briefly (one sentence each!), what is happening in each.

ii. Why are these processes important to bacteria and why are they important to us?

A. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ B. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 

  

**Short Answer: These will be written in paragraph form and in complete sentences on the day of the test. You may not bring any notes with you.**

 A. Discuss the sequence of steps whereby bacteria can make a person ill. Include transmission, colonization and growth and invasion of tissue. Use tetanus or cholera as your example.

 B. It typically takes a year or more of antibiotic treatment to clear even a non-resistant case of tuberculosis, and patients often feel quite well during the latter half of the treatment. Why does this make tuberculosis bacteria particularly likely to develop resistance to every antibiotic in current use? Describe a scenario (for example, if…) in which this may occur.

 C. Compare the processes of ***binary fission*** and ***conjugation*** in the survival of bacteria. Describe each process and discuss their roles in terms of bacterial reproduction, genetic variability and antibiotic resistance.

 D. Discuss the reasons for the growing problem of antibiotic resistance in hospital settings. Why is this more prevalent there? What are 3 practices that increase the likelihood of antibiotic resistance and what and 3 practices that should be done to avoid it.