

# Microbiology Study Guide

## Microbial growth

### ***PHYSICAL REQUIREMENTS FOR GROWTH***

- Growth of population: increase in the number of cells
- Requirements are both *physical and chemical*

#### PHYSICAL REQUIREMENTS:

- \*psychrophiles: cold loving microbes
- \*mesophiles: moderate temperature
- \*thermophiles: heat loving
- Minimum growth temperature: the lowest temperature that a species will grow
  - Optimum: temperature it grows best
  - Maximum: highest temperature tolerated for growth
- Most bacteria grow at a pH value between 6.5-7.5
- Most microbes undergo plasmolysis (shrinking) in hypertonic solutions; halophiles (microorganisms that require salt to survive) can tolerate higher salt concentrations

#### CHEMICAL REQUIREMENTS:

- Carbon—all organisms require a carbon source
- \*chemoheterotrophs: use an organic molecule (pure carbon)
- \*autotrophs: use carbon dioxide
- Nitrogen—needed for protein and nucleic acid synthesis. Obtained from decomposition of proteins, from  $\text{NH}_4$  or  $\text{NO}_3$ .
- Oxygen—obligate aerobes (require oxygen); facultative anaerobes (will use oxygen if it is present but do not require it); anaerobes (do not use oxygen) – for growth
- Other: sulfur, phosphorus, trace elements, organic growth factors

#### BIOFILMS

- Microbes adhere to surfaces and accumulate as biofilms on solid surfaces in contact with water
- Most bacteria live in biofilms
- Microbes in biofilms are more resistant to antibiotics than free-swimming microbes

# Microbiology Chapter Study Questions

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## **Microbiology Chapter Study Questions:**

## Unveiling the Power of Verbal Artistry: An Psychological Sojourn through **Microbiology Chapter Study Questions**

In some sort of inundated with monitors and the cacophony of instantaneous communication, the profound power and mental resonance of verbal artistry often disappear into obscurity, eclipsed by the regular assault of sound and distractions. Yet, located within the musical pages of **Microbiology Chapter Study Questions**, a interesting work of fictional splendor that impulses with natural feelings, lies an unique journey waiting to be embarked upon. Published with a virtuoso wordsmith, this interesting opus manuals viewers on a psychological odyssey, softly revealing the latent potential and profound impact embedded within the complicated internet of language. Within the heart-wrenching expanse with this evocative examination, we shall embark upon an introspective exploration of the book is main themes, dissect its charming writing style, and immerse ourselves in the indelible effect it leaves upon the depths of readers souls.

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