

PREVIEW MATERIAL FOR Exam 1 - Spring 2017

The following material will appear on the upcoming exam. Use this preview to familiarize yourself with the material, and guide you in studying. Be sure to look up the definitions of any words you do not know. **You are free to discuss this material or ask questions about it.**

Use a #2 pencil to fill in the information on your NCS answer sheet.

- Put your **O-Key Account Username** in the spaces indicated for **LAST NAME** and darken the corresponding circles.
- Write your Name** (Last, First) either "**Star**" or "**NoStar**" (the test form) **above** the words "Last Name"
- Put your **CWID** in the spaces indicated for "**Student ID**" and darken the corresponding circles.
- Enter **1711** in the spaces indicated for "**Course number**" and darken the corresponding circles
- Enter **001** (Star) or **002** (NoStar) in the spaces indicated for "**SEC**" and darken the corresponding circles.

During the exam, read all questions and answers **carefully** before choosing the **single BEST response** for each question. Feel free to ask the instructor for clarification.

An outdoor experiment has been performed to measure the response of tadpoles to different water temperatures, a researcher uses identical glass containers with ten experimental animals each, and he records the number of animals swimming or motionless. He wants to classify his variables as independent and dependent.

An experiment was performed with 30 lab rats exposed to three different diets (10 rats per diet). Researchers fed the rats with the same weight of food and tested them in trials with an exercise wheel three hours after food intake every day. The sugar content in every diet is presented in the table below.

| | Sugarcane | Pecan nuts | Romaine lettuce |
|----------------------------|-----------|------------|-----------------|
| Sugar content per gram (%) | 8 | 3.9 | 0.5 |

Animal scientists have so far been able to measure the metabolic rate (as CO₂ production) of four unusual creatures when held at various temperatures (see chart).

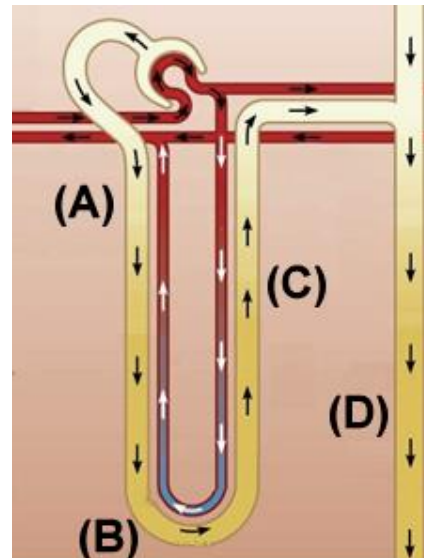
CO₂ production rate*

| Creature | Mean body temp | 15°C | 20°C | 25°C | 37°C | 42°C |
|----------|----------------|------|------|------|------|------|
| 1 | 37°C | 148 | 100 | 100 | 100 | 145 |
| 2 | 32°C | 70 | 78 | 86 | 105 | 113 |
| 3 | 37°C | 140 | 98 | 98 | 98 | 140 |
| 4 | 31°C | 65 | 69 | 79 | 89 | 101 |

*measured in micromoles of CO₂/g/min when creature is resting

Daniel was jogging on the West River Trail in Oklahoma City in a late fall morning when the Sun started to rise above the horizon. It was a cold morning and he noticed that many grasshoppers on the asphalt surface of the trail did not move even when he touched them. It was a very sunny and windless day and Daniel started to get sweaty along with the passing of time. Later in that morning he saw many smaller grasshoppers starting to jump around on the asphalt surface but larger ones still did not move when touched. The larger grasshoppers finally started to jump around during the afternoon hours.

The figure in your right presents a nephron with the loop (A to C) of a desert-dwelling mammal



Cold-water, aquatic mammals like orcas have counter-current exchange mechanisms that extend between the core of their body (close to the heart) and their extremities: tail, fins, and nose.

