

Directions: Each passage is followed by several questions. After reading a passage, choose the best answer to each question and fill in the corresponding oval on your answer document. You may refer to the passages as often as necessary.
 You are NOT permitted to use a calculator on this test.

A scientist studying hemoglobin investigated the impact of temperature and carbon dioxide (CO_2) concentrations on the binding capacity of oxygen (O_2). The scientist observed the binding of oxygen to hemoglobin molecules as the pressure of oxygen was increased. The temperature and CO_2 were varied to identify their direct impact on the binding capacity of O_2 .

Figure 1 displays the impact of changes in temperature on the binding (percent of hemoglobin saturated) of oxygen. Figure 2 displays the impact of varying carbon dioxide concentrations on oxygen binding. Under normal conditions, the core body temperature is 37°C and has carbon dioxide and oxygen concentrations of 40 mmHg and 100 mmHg respectively.

image: http://www.crackact.com/images/tests/Prin_9780307945938_epub_749_r1.jpg

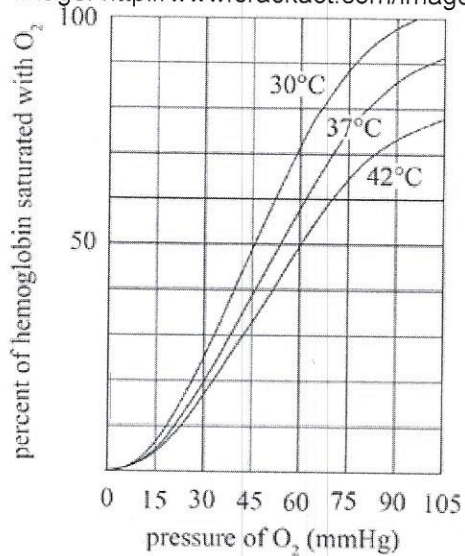


Figure 1

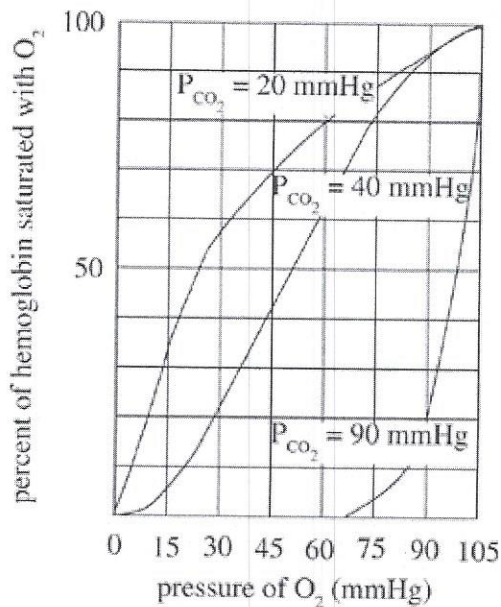


Figure 2

AMI DAY 1 Name: _____ Date: _____

Figure 2

1. According to Figure 1, if the temperature is 42°C, which of the following changes in pressure of oxygen will cause the least increase in the percent of hemoglobin saturated with O₂?
- F. 0-15 mmHg
 - G. 15-30 mmHg
 - H. 30-45 mmHg
 - J. 45-60 mmHg
2. According to Figure 1, which of the following sets of temperature and pressure of oxygen results in the lowest hemoglobin saturation with oxygen?
- Temperature (°C)
- A. 37
 - B. 37
 - C. 42
 - D. 42
3. According to Figure 1, if the pressure of oxygen is 100 mmHg and 65% of hemoglobin molecules are saturated with oxygen then the core body temperature is most likely within which of the following ranges?
- F. Less than 30°C
 - G. 30°C-37°C
 - H. 37°C-42°C
 - J. Greater than 42°C
4. Based on Figure 2, if an individual has 70% of his hemoglobin molecules saturated at a pressure of 75 mmHg of oxygen, then the individual's carbon dioxide pressure is most likely closest to which of the following?
- A. 30 mmHg
 - B. 50 mmHg
 - C. 70 mmHg
 - D. 90 mmHg
5. According to Figure 2, at a CO₂ pressure of 90 mmHg, as the pressure of O₂ is increased from 45 mmHg to 90 mmHg, the percent of hemoglobin saturated with oxygen:
- F. remains constant, then increases.
 - G. remains constant, then decreases.
 - H. increases, then decreases.
 - J. decreases, then increases.