Regulation of Ventilation

Introduction

1. a. Describe normal ventilation as a continuous cycle of inspiration and expiration.

b. What regulates this continuous cycle?

Basic Rhythm

2. Explain the role of the inspiratory and expiratory areas of the brain.

3. What is a spirogram?

4. a. Describe inspiration stimulation by the inspiratory area of the brain.

b. Describe passive expiration.
5. Explain the role of accessory inspiratory muscles and how they are stimulated during forced inspiration.

6. Explain stimulation and the role of the expiratory area during forced expiration.

Control of Ventilation Rate by Other Brain Centers

7. Describe how each of the following parts of the pons modifies ventilation rate.
   
   Pneumotaxic area

   Apneustic area

8. Describe how the hypothalamus contributes to ventilation regulation.

9. a. Describe how the cerebral cortex supplies a limited level of respiratory control.

   b. Why is cortical control essential?

Effects of Blood Chemistry

9. What is function of chemoreceptors in the central and peripheral nervous systems.
10. a. Describe the respiratory response to increasing \( CO_2 \) and \( H^+ \) as detected by chemoreceptors.

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b. Define hyperventilation __________________________________________________

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c. How do these adjustments contribute to homeostasis? ______________________

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11. a. Describe the respiratory response to decreasing \( CO_2 \) and \( H^+ \) as detected by chemoreceptors.

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b. Define hypoventilation __________________________________________________

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c. How do these adjustments contribute to homeostasis? ______________________

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