

# Study Guide for Exam 3

## Part 1 of 2 - Respiration

Page #s indicate where topic begins.

### MECHANICS OF BREATHING P. 846 / 819

#### PRESSURE RELATIONSHIPS IN THE THORACIC CAVITY P. 846 / 819

Atmospheric (a.k.a. barometric)

Intrapulmonary (a.k.a. alveolar)

Intrapleural

Lung Recoil due to 1) lung elasticity and 2) surface tension of alveolar fluid

#### PULMONARY VENTILATION: INSPIRATION AND EXPIRATION p. 847 / 820

Boyle's Law (a.k.a. The General Gas Law)

Inspiration

Surface tension of pleural fluid holds lungs to thoracic wall

Lung Compliance p. 849 / 824

Expiration

**Clinical Applications:** Atelectasis, pneumothorax, and IRDS

### DALTON'S LAW OF PARTIAL PRESSURES P. 854 / 827

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### HENRY'S LAW p. 854

### GAS EXCHANGES BETWEEN BLOOD, LUNGS, AND TISSUES P. 855 / 827

External Respiration p. 855 / 828

The Respiratory membrane p. 842 / 816

Ventilation – Perfusion Coupling

Internal Respiration p. 858 / 830

### TRANSPORT OF RESPIRATORY GASES BY BLOOD p. 858 / 830

O<sub>2</sub> Transport: affinity, saturation, oxyhemoglobin, deoxyhemoglobin

Effects of P<sub>O<sub>2</sub></sub>, P<sub>CO<sub>2</sub></sub>, temperature, and pH on affinity

Carbon monoxide poisoning

Cyanosis

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CO<sub>2</sub> Transport: carbaminohemoglobin, carbonic acid, bicarbonate ions, and carbonic anhydrase

The CO<sub>2</sub> – pH “see-saw” relationship

### CONTROL OF RESPIRATION p. 863 / 834

Control Centers

Genesis of the Respiratory Rhythm

Hyperventilation & Hypoventilation

(compensatory vs. noncompensatory)

Factors Influencing Rate and Depth p. 865 / 836

Influence of Higher Brain Centers

Chemical Factors

CO<sub>2</sub> (and therefore pH of CSF)

Arterial Blood pH

O<sub>2</sub>

Hypoxic Drive OYO

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### CLINICAL APPLICATIONS

COPD, Obstructive Emphysema, Chronic Bronchitis, TB, and “What ifs”...?

**Study Guide for Exam 3**  
**Part 2 of 2 - Digestion, Body Temperature, and Hyperthermia**  
Page #s indicate where topic begins.

**DIGESTIVE SYSTEM DISORDERS (some from handout and some OYO)**

- Constipation
- Diarrhea
- Lactose Intolerance
- Diverticulosis & (-itis)
- Peptic Ulcers
- Appendicitis
- Peritonitis
- IBS
- Gallstones

**CHOLESTEROL p. 978 / 943 [OYO from lecture viewed online]**

- Uses of cholesterol
- Cholesterol Transport
  - Lipoproteins
    - Chylomicrons
    - VLDLs
    - LDLs
    - HDLs
- Factors Influencing Plasma Cholesterol Levels

**REGULATION OF BODY TEMPERATURE p. 985 / 950**

- Mechanisms of Heat Exchange – OYO p. 986 / 950
- The Control Center = Hypothalamus
- Heat Promoting Mechanisms – OYO p. 987 / 952
- Heat Loss Mechanisms – OYO p. 988 / 953

**HYPERTHERMIA p. 989 / 953**

- Heat Exhaustion
- Heat Stroke
- Fever

**EXAM #3**