

## Human Physiology II. exam topics

*During the oral exam every student shall pick by chance one topic from each of the two topic lists.*

### TOPIC LIST I.

#### **1. Kidney and pH regulation**

- 1.1. Basic aspects of the renal function. The circulation of the kidney.
- 1.2. The glomerular filtration.
- 1.3. Tubular transport processes in the proximal nephron (proximal tubule and the thin loop of Henle).
- 1.4. Tubular transport processes in the TAL and more distal nephron segments.
- 1.5. The formation of concentrated or diluted urine in the kidney.
- 1.6. Regulation of the osmotic concentration of the body.
- 1.7. Regulation of the circulating blood volume of the body.
- 1.8. The acid-base balance. The contribution of the lung to the maintenance of the normal pH.
- 1.9. The acid-base balance. The contribution of the kidney to the maintenance of the normal pH.

#### **2. The nervous system and special senses**

- 2.1. General aspects of the nervous system. Physiology of nerve and glia cells.
- 2.2. Physiology of the somatic motor system.
- 2.3. Physiology of somatic sensory functions (touch, temperature, pain) and of chemical senses (taste and olfaction)
- 2.4. Physiology of vision.
- 2.5. Physiology of hearing and equilibrium.

### TOPIC LIST II.

#### **3. Gastrointestinal functions**

- 3.1. Regulation of the gastrointestinal system: function of the enteral nervous system and gastrointestinal hormones.
- 3.2. Motor function of the gastrointestinal tract and its regulation.
- 3.3. Function of salivary glands, regulation of saliva secretion. Gastric secretion and its regulation.
- 3.4. External secretion of pancreas, regulation of secretion. Bile secretion. Enterohepatic recycling. Bilirubin metabolism.
- 3.5. Digestion and absorption of nutrients. Absorption of sodium, calcium and water. Absorption of vitamin B<sub>12</sub> and iron.
- 3.6 Regulation of food uptake and energy balance.
- 3.7 Control of body temperature. Mechanism of fever and hyperthermia.

#### **4. Endocrinology**

- 4.1. Basics of endocrinology.
- 4.2. Hypothalamo-hypophyseal axis.
- 4.3. Hormones of the adrenal cortex: glucocorticoids.
- 4.4. Hormones of the adrenal cortex: mineralocorticoids, androgens.
- 4.5. Calcitropic hormones.
- 4.6. Physiology of bone and growth.
- 4.7. Thyroid hormones.
- 4.8. Endocrine regulation of intermediary metabolism.
- 4.9. Regulation of insulin secretion; effects of insulin.
- 4.10. Sexual endocrinology; male sexual functions.
- 4.11. Sexual endocrinology; female sexual functions.