



Al-Azhar University-Gaza
College of Pharmacy

Department of
Pharmacology and medical sciences

Human Physiology II
Final Exam

Date: 22 / 05 /2017
Time: 120 minutes

الرجاء عدم الكتابة بالقلم الرصاص

الاسم (تأني بالغة العربية)

Question	Marks	
Midterm	/40	/50
Part I Respiratory	/10	
Part II MCQ	/ 20	/50
Part III S/N	/ 30	
Total	/ 100	

Part I: (Short notes) Please answer the following questions with drawing if necessary :

(A) What are the locations and functions of the respiratory control centers? (5 point)

(B) How the ventilation magnitude is adjusted in response to three chemical factors: (P_{O_2} , P_{CO_2} , and H^+). (5 point)

MCQ Please choose the correct answer: (1 point each)

1. The three major renal processes are:

- (a) tubular reabsorption, glomerular filtration, and tubular secretion.
- (b) tubular absorption, glomerular filtration, and tubular secretion.
- (c) tubular reabsorption, glomerular filtration, and tubular excretion.
- (d) tubular reabsorption, glomerular secretion, and tubular excretion.
- (e) None of these choices.

2. The major force opposes glomerular filtration is:

- (a) Glomerular capillary blood pressure.
- (b) Bowman's capsule hydrostatic pressure.
- (c) Bowman's capsule osmotic pressure.
- (d) Plasma-colloid osmotic pressure.
- (e) Non of these choices.

3. The secretion of potassium in the kidney tubules is primarily under the regulation of:

- (a) vasopressin.
- (b) atrial natriuretic peptide.
- (c) aldosterone.
- (d) insulin.
- (e) cortisol.

4. The plasma clearance of a substance is equal to GFR if:

- (a) the substance is filtered and reabsorbed.
- (b) reabsorbed only.
- (c) secreted only.
- (d) the substance is filtered but not reabsorbed or secreted.
- (e) the substance is filtered, secreted, and not reabsorbed.

5. Into which structure does most reabsorption occur?

- (a) proximal convoluted tubule.
- (b) glomerulus.
- (c) distal convoluted tubule.
- (d) loop of Henle.
- (e) None of these answers.

6. The intrinsic nerve plexuses

- (a) produce spontaneous depolarization of the smooth muscle cells in the wall of the digestive tract.
- (b) are located in the mucosa.
- (c) coordinate local activity in the digestive tract.
- (d) Both (a) and (c) above.
- (e) All of these answers.

7. Which of the following is not a function of the kidneys?

- (a) excretion of metabolic wastes.
- (b) maintaining proper plasma volume.
- (c) secreting aldosterone to regulate sodium.
- (d) maintains proper osmolarity of body fluids.
- (e) assisting in maintaining the proper acid-base balance of the body.

Tubular maximum (T_m)

- (a) is the maximum amount of a substance that the tubular cells can actively transport within a given time period.
- (b) is the maximum rate at which a substance is filtered at the glomerulus.
- (c) occurs when the membrane carrier becomes saturated.
- (d) Both (a) and (c) above.
- (e) Both (b) and (c) above.

The ascending limb of the loop of Henle is where

- (a) NaCl passively leaves the tubular fluid down its concentration gradient.
- (b) NaCl is actively transported into the interstitial fluid, leaving water behind because the tubular cells are not permeable to water.
- (c) K⁺ is secreted.
- (d) aldosterone stimulates Na⁺ reabsorption.
- (e) None of these answers.

Vasopressin

- (a) can completely stop urine production during periods of water deprivation to conserve water for the body.
- (b) activates the cyclic AMP second-messenger system within the tubular cells.
- (c) renders the distal and collecting tubules impermeable to water.
- (d) increases Na⁺ reabsorption by the distal portions of the nephron.
- (e) stimulates the active salt pump of the ascending limb of the loop of Henle to establish the medullary vertical osmotic gradient.

1. Which of the following is not a layer of the GI tract?

- (a) Muscularis externa
- (b) Submucosal plexus
- (c) Serosa
- (d) Submucosa
- (e) Mucosa

12. Smelling, seeing, or thinking about food stimulates the:

- (a) innate salivary reflex.
- (b) sympathetic reflex.
- (c) parasympathetic reflex.
- (d) acquired salivary reflex.
- (e) None of these choices.

13. The purpose of the epiglottis is to:

- (a) close off the oral cavity during speech.
- (b) close off the respiratory passage during swallowing.
- (c) assist with coughing and sneezing.
- (d) close off the nasal cavity during swallowing.
- (e) None of these choices.

14. Pancreatic enzymes are all released from:

- (a) pancreatic beta cells.
- (b) pancreatic duct cells.
- (c) pancreatic alpha cells.
- (d) pancreatic acinar cells.

5. Which does not enter the duodenal lumen?

- (a) trypsinogen.
- (b) bile salts.
- (c) disaccharidases.
- (d) gastric contents.
- (e) amylase.

6. Which of the following is the most important stimulus for contraction of the gallbladder?

- (a) CCK causes contraction of the gallbladder.
- (b) mechanical contraction of the small intestine causes bile to be forced out of the gallbladder.
- (c) sympathetic stimulation causes contraction of the gallbladder.
- (d) an increase in bile secretion by the liver causes contraction of the gallbladder.
- (e) bile salts cause contraction of the gallbladder.

17. The small intestinal digestive enzymes

- (a) are secreted into the lumen, where they perform their function.
- (b) act intracellularly within the brush borders.
- (c) complete the digestion of carbohydrates.
- (d) Both (a) and (c) above.
- (e) Both (b) and (c) above.

18. Absorption of which of the following is linked to active sodium absorption at the basolateral border of the epithelial cell

- (a) water.
- (b) glucose.
- (c) galactose.
- (d) amino acids.
- (e) All of these answers.

19. The enzyme that breaks down table sugar is

- (a) maltase.
- (b) lactase.
- (c) sucrase.
- (d) enterokinase.
- (e) peptidase.

20. Chylomicrons are

- (a) aggregations of triglycerides formed within intestinal epithelial cells and covered with a layer of lipoprotein, which renders them water-soluble.
- (b) aggregations of bile salts, monoglycerides, and free fatty acids.
- (c) small fat globules held apart by the action of bile salts.
- (d) secreted in the succus entericus.
- (e) digested by bacteria in the colon.

21. Which of the following statements concerning secretin is correct?

- (a) the most potent stimulus for secretin secretion is the presence of fat in the duodenum.
- (b) secretin stimulates pancreatic enzyme secretion.
- (c) secretin stimulates the secretion of bicarb.
- (d) secretin stimulates the acinar cells.
- (e) None of these answers.

Please describe regulation of H₂O reabsorption in response to a H₂O deficit and to a H₂O excess. (5 point)

C) Discuss the factors regulating gastric motility and emptying, in term of mode of regulation and the effect . (5 point)

Part III: (Short notes) Please answer the following questions with drawing if necessary:

A) Describe briefly Controlled Adjustments in the glomerular filtration rate. (5 point)

B) Discuss the dual control of aldosterone secretion. (5 point)

Describe the stomach mucosa and the gastric glands in terms of (Product Secreted, Stimuli for Secretion and Functions of Secretory Product). (5 point)

F) Discuss the overall process of Fat digestion and absorption. (5 point)