

FISHERS HIGH SCHOOL ANATOMY AND PHYSIOLOGY TEST ANSWER KEY 2017

Point Breakdown

- 52 Multiple Choice Questions- 1 point each: 52 points total
- Free Response Questions- 15 points total
 1. 3 points
 2. 2 points
 3. 3 points
 4. 3 points
 5. 4 points
- Matching Questions: 14 points total
 - 1-5 on antibodies: 5 points (1 point each)
 - 1-9 on breathing patterns: 9 points (1 point each)
- Total points possible: **81 points**

Complete the following multiple choice questions. (1 point each)

1. Which of the following nonrespiratory movements has the most similar mechanism to laughing?
 - a. coughing
 - b. crying**
 - c. yawning
 - d. hiccuping
2. Which of the following disorders involves the alveolar walls breaking down and the surface of the lungs being reduced?
 - a. asthma
 - b. chronic bronchitis
 - c. emphysema**
 - d. Pneumonia
3. Vibration due to exhaled air that results in speech is a function of the
 - a. trachea
 - b. epiglottis
 - c. nasopharynx
 - d. true vocal cords**
4. Which description below describes the way 60% of carbon dioxide is transported in blood?
 - a. as bicarbonate**
 - b. physically dissolved in plasma
 - c. bound to Hb
 - d. bound to another molecule of carbon dioxide
5. Which step below is the first step in external respiration?
 - a. oxygen and carbon dioxide exchanged between alveoli and blood by diffusion across pulmonary capillaries
 - b. blood transports oxygen and carbon dioxide between lungs and tissues
 - c. oxygen and carbon dioxide are exchanged between tissue and blood by diffusion across systemic capillaries
 - d. ventilation is flow of air into and out of lungs**
6. Which of the following statements is false regarding the pharynx?
 - a. 5 inches long
 - b. commonly called the throat
 - c. continuous with the nasal cavity via the internal nares
 - d. plays a role in speech**
7. What is tidal volume?
 - a. amount of air inhaled or exhaled with each breath under resting conditions**
 - b. amount of air remaining in lungs after forced exhalation
 - c. amount of air that can be inhaled during forced breathing

- d. amount of air that can be exhaled during forced breathing
8. Which of the following equations best describes total lung capacity?
- TV + IRV + ERV
 - VC + RV**
 - ERV + RV
 - TV + IRV
9. Respiratory control center is located in the:
- brainstem**
 - midbrain
 - frontal Lobe
 - parietal Lobe
10. Shortness of breath associated with release of histamine is:
- asthma**
 - emphysema
 - bronchitis
 - pneumonia
11. Which statement below is not an effect of exercise on the respiratory system?
- The muscle cells produce increased amounts of carbon dioxide
 - The brain tells the heart to beat faster
 - The brain detects increasing levels of oxygen- a signal is sent to the lungs to decrease breathing**
 - Breathing rate and the volume of air in each breath increases
12. Which of the following describes the mucosa layer of the wall of the digestive system?
- Thick layer of connective tissue that provides distensibility and elasticity
 - Lines the luminal surface of the digestive tract.**
 - Outer connective tissue covering; secretes serous fluid and prevents friction
 - major smooth muscle coat of the digestive tract.
13. List the layers of the alimentary canal from the lumen to the outside.
- mucosa, muscularis externa, submucosa, serosa
 - mucosa, submucosa, muscularis externa, and serosa**
 - submucosa, muscularis externa, serosa, mucosa
 - Mucosa, submucosa, serosa, muscularis externa
14. What are the parts of the large intestine?
- colon, cecum, appendix, and rectum**
 - cecum, ileum, colon, appendix
 - colon, cecum, jejunum, ileum
 - ileum, jejunum, duodenum, colon

15. The posterior region of the tongue is attached to hyoid bone, it is covered with lymphatic tissue called
- Palatine Tonsils
 - Lingual Tonsils**
 - Pharyngeal Tonsils
 - Sublingual gland
16. This enzyme splits molecules of starch or glycogen into disaccharides
- Pancreatic Lipase
 - Carboxypeptidase
 - Pancreatic Amylase**
 - Trypsin
17. What are the four functions of the digestive system?
- Absorption, secretion, nutrition, motility
 - Absorption, secretion, digestion, motility**
 - Secretion, digestion, motility, decomposition
 - Secretion, absorption, nutrition, decomposition
18. What are the bacteria in the GI tract that aid in digestion called?
- Gut flora**
 - Spirillum
 - Mycobacterium
 - Bacillus
19. Where does the body store fat-soluble vitamins, such as vitamins A, D, E, and K?
- Stomach & liver
 - Stomach & fatty tissue
 - Liver & stomach
 - Liver & fatty tissue**
20. Malfunction of this sphincter results in Gastroesophageal reflux disease
- Upper esophageal sphincter
 - Lower esophageal sphincter**
 - Pyloric Sphincter
 - Hepatopancreatic sphincter
21. Extra Iron in the blood is mostly stored in
- Pancreas
 - Stomach
 - Liver**
 - Kidney

22. In addition to water, bile contains:
- Protein
 - Carbohydrate
 - Cholesterol**
 - Minerals
23. Contraction of gallbladder to release bile is controlled by:
- trypsin
 - Chymotrypsin
 - Cholecystokinin**
 - Lipase
24. A lack of Bile Salts results in:
- Poor lipid absorption**
 - Poor Carbohydrate absorption
 - Poor Protein metabolism
 - Electrolyte imbalance
25. The S shaped curve just below the rectum is the:
- Ascending colon
 - Descending Colon
 - Sigmoid colon**
 - Transverse colon
26. Lack of Vitamin A causes
- Weak Bones
 - Effect on Skin and Vision**
 - Decreased immunity
 - Impaired clotting
27. This mineral deficiency causes altered taste
- Mg
 - Calcium
 - Zinc**
 - Cobalt
28. Xerostomia means:
- Dry Mouth**
 - Dry Skin
 - Dry Hair
 - Dry Nose

29. This lipoprotein is responsible for removing cholesterol from tissues and delivering it to liver.
- LDL
 - Triglycerides
 - HDL**
 - VLDL
30. Most absorption happens in which part of GI tract:
- Large Intestine
 - Stomach
 - Small Intestine**
 - Liver
31. The jejunum and ileum are suspended from the posterior abdominal wall by
- Greater Omentum
 - Lesser Omentum
 - Mesentery**
 - Mucosa
32. What is the correct term to describe the migration of white blood cells toward bacteria?
- Chemotaxis**
 - Phagocytosis
 - Metastasization
 - Chemiosmosis
33. Which of the following statements does not describe a toxoid vaccine?
- The resultant protein product is used to provoke the immune system.
 - A purified toxin produced by the antigen is used to elicit immune response.
 - Genes for microbial antigens are inserted into a plasmid vector and are cloned in appropriate hosts.
 - These vaccines contain all or part of the pathogen's DNA.**
34. Which immune disease involves the thyroid gland producing excessive amounts of thyroxine?
- Grave's Disease**
 - Myasthenia gravis
 - Multiple Sclerosis
 - Rheumatoid arthritis
35. As one gets older, the thymus gland _____.
- Enlarges
 - Shrinks**
 - Softens
 - Hardens

36. What is the function of the thymus gland?
- Produce beta cells
 - Produce T-cells**
 - Produce lymph
 - Produce blood cells
37. Which cell type does not perform phagocytosis?
- Neutrophil
 - Basophil**
 - Eosinophil
 - Mast cell
38. Police : criminals as _____ : _____
- Red Blood Cells : Oxygen
 - Thrombocytes : antigens
 - Antibodies: microbes**
 - Thrombocytes : neutrophils
39. What are the two immune systems that the human body has?
- Innate & Adaptive**
 - Acquired & Specific
 - Innate & Responsive
 - Acquired & Adaptive
40. Neutrophils are part of what immune system?
- Adaptive
 - Innate**
 - Specific
 - Responsive
41. Natural Killer T-Cells are considered part of what immune systems?
- Innate & Adaptive**
 - Acquired & Specific
 - Innate & Responsive
 - Acquired & Adaptive
42. What is the difference between humoral and cell-mediated immunity?
- Cell-mediated immunity focuses on using cell macromolecules to fight against microbes whereas humoral immunity revolves around the activation of phagocytes.
 - Cell-mediated immunity is often referred to as antibody-mediated immunity while humoral immunity is often referred to as antigen-mediated immunity.
 - Cell-mediated that does not involve antibodies, whereas humoral does.**
 - All of the above are true.

43. What is an example of an autoimmune disease?
- a. Sickle Cell Disease
 - b. Alzheimer's
 - c. Lou Gherig's Disease
 - d. Multiple Sclerosis**
44. The spleen's function is to ____.
- a. Produce antibodies
 - b. Filter blood**
 - c. Create lymph fluid
 - d. Filter urine
45. What is the function of Peyer's Patches?
- a. To generate memory lymphocytes for long-term immunity**
 - b. Remove pathogens from food or air
 - c. Extract aged red blood cells
 - d. Stores platelets
46. What are the 4 signs of short term inflammation?
- a. Swelling, heat, fever, pain
 - b. Swelling, redness, heat, pus
 - c. Redness, heat, swelling, pain**
 - d. Redness, heat, fever, pus
47. Which of the following explains diapedesis?
- a. Chemical signals prompt neutrophils to flatten out of capillaries**
 - b. Neutrophils migrate to site of injury
 - c. Inflamed cells sprout cell adhesion molecules
 - d. Chemicals from injured site attract natural killer cells
48. Which 2 cells secrete pyrogens?
- a. Natural killer cells, macrophages
 - b. Leukocytes, macrophages**
 - c. Leukocytes, natural killer cells
 - d. Eosinophils, macrophages
49. Which of the following does not describe basic antibody structure?
- a. Y or T shaped
 - b. 4 heavy chains**
 - c. Each antibody has a constant region
 - d. Each antibody has a variable region

50. Allografts are defined as:
- Tissue grafts transplanted from one genetically different individual to another**
 - Tissue grafts transplanted from one body site to another in the same person
 - Tissue grafts transplanted from one species to another
 - Tissue grafts transplanted from one genetically identical individual to another
51. What are cytokines?
- antibodies
 - polypeptides**
 - carcinogens
 - viruses
52. Which type of immunity is generally caused by vaccines?
- artificially acquired passive immunity
 - naturally acquired passive immunity
 - artificially acquired active immunity**
 - naturally acquired active immunity

FRQ QUESTIONS- (Points vary per question)

1. Compare and contrast inspiration and expiration.

(3 points: 1 point for discussing defining each term correctly, 1 point for similarity, 1 point for a difference)

Inspiration is when the intrapleural pressure falls to 754 mm Hg, air moves down the pressure gradient and enters the lungs, air flows into the lungs because of the fall in intra-alveolar pressure brought about by lung expansion. Lung expansion is not caused by movement of air into the lungs. During inspiration, enlargement of the thoracic cavity is primarily due to contraction and flattening of the diaphragm. Enlargement of the thoracic cavity lowers intra-pleural pressure. Expiration begins with passive relaxation of inspiratory muscles. Muscle relaxation plus the elastic recoil of alveoli decreases size of the thoracic cavity. This causes increase in intra-alveolar pressure. When pressure increases above atmospheric pressure, air is driven out. Forced expiration can occur by contraction of expiratory muscles.

2. What happens during heartburn?

(2 points: 1 point for definition of heartburn, 1 point for elaboration)

When one eats food, the food goes into the stomach and stomach acid is used to break down this food. The lower esophageal sphincter, the area at which the esophagus meets the stomach, closes to keep food from going up into the esophagus. If this sphincter doesn't work, acid can be refluxed into the esophagus causing that burning sensation in the chest.

3. Explain Lupus. What major body system does this disease involve and which population is most likely to get Lupus? (3 points)

- Lupus involves the immune system (1 point)
- Lupus is when the body's immune system attacks its own tissues and organs. (1 point)
- Women are more likely than men to develop Lupus (1 point)

4. Explain why there are different blood types. What would happen to a person if two different types were to be mixed? (3 points)

- Blood cells have antigens on their surfaces that determine the type of blood that they are, and some blood cells have antigen A, others have antigen B, some have both, and some have neither--creating the A, B, AB, and O (no antigens) blood types. (1 point for discussing antigens)
- If someone is given blood that is not the same type as theirs, that person's immune system will attack the blood cells that were transfused, as the body will treat these unknown cells as foreign invaders. (1 point for mentioning immune system will attack)
- The patient could suffer kidney failure or even death as a result. (1 point)

5. Discuss the role of fiber in the digestion process. What are the two types, and how does each affect the cycle in its own way? (4 points)

- Insoluble fibers draw water to the intestine. (1point)
- Increases the abundance and softness of waste products. (1 point)
- Soluble Fibers can be dissolved slowly and helps slow down the digestive process--allows stomach to stay fuller for longer. (1 point for dissolving slowly, 1 point for slowing down digestive process as a whole)

Matching:

Match the antibody with its function. (1 point for each correct match)

- | | |
|------------|--|
| 1.IgE__D__ | a. First released to blood by plasma cells |
| 2.IgD__C__ | b. Found in mucus; Prevents pathogens from entering the body |
| 3.IgA__B__ | c. Always bound to B cells |
| 4.IgM__A__ | d. Involved in allergies |
| 5.IgG__E__ | e. Can cross placenta; most abundant |

Match the breathing pattern its definition (1 point for each correct match).

- | | |
|--------------------------------|--|
| 1. <u>C</u> Eupnea | a. shortness of breath |
| 2. <u>G</u> Apnea | b. occurs when lying down |
| 3. <u>E</u> Hyperpnea | c. normal, relaxed breathing |
| 4. <u>H</u> Hyperventilation | d. Permanent cessation of breathing |
| 5. <u>B</u> Orthopnea | e. increased rate and depth of breathing |
| 6. <u>F</u> Tachypnea | f. Accelerated respiration |
| 7. <u>A</u> Dyspnea | g. skipped breaths |
| 8. <u>I</u> Hypoventilation | h. increased pulmonary ventilation |
| 9. <u>D</u> Respiratory Arrest | i. reduced pulmonary ventilation |