**Final Exam for Anatomy & Physiology**

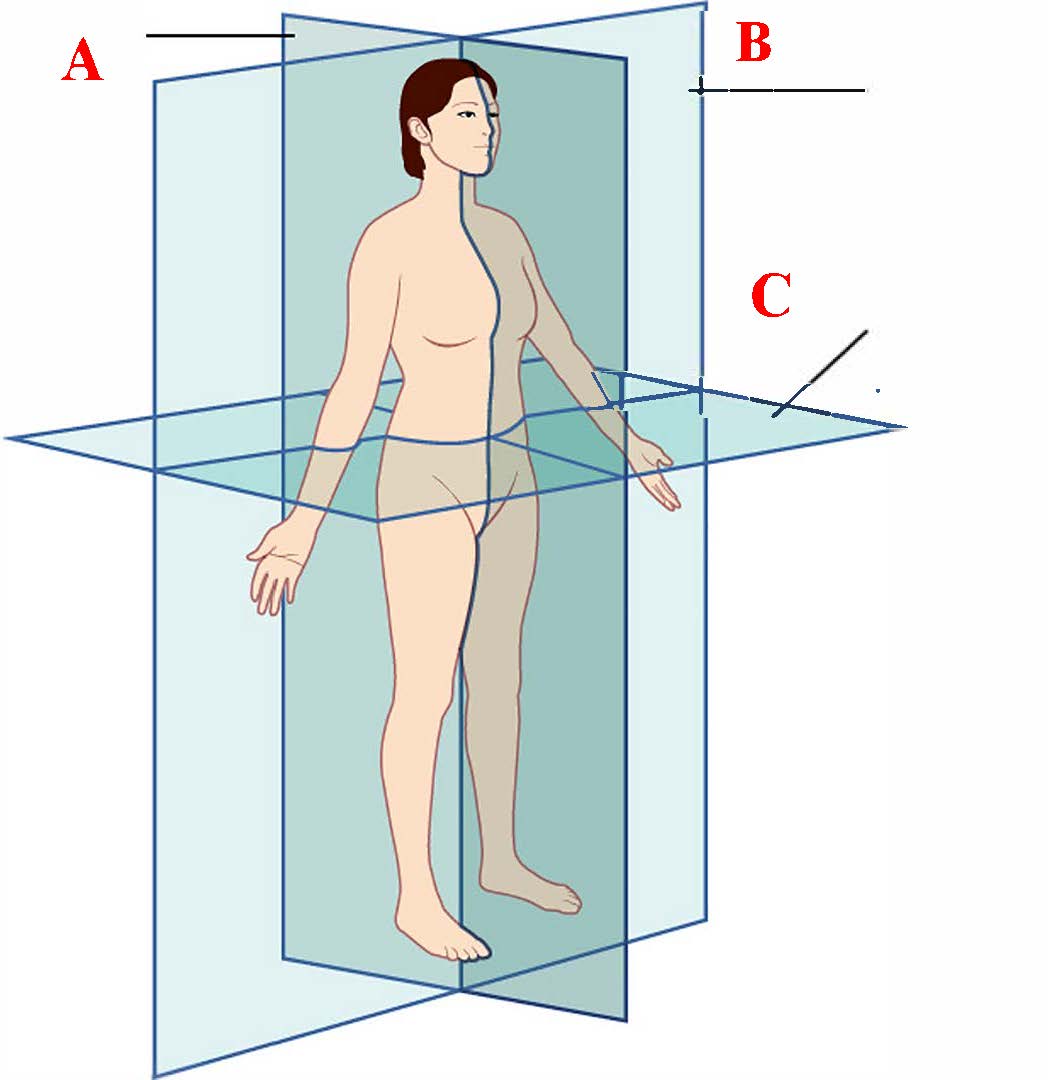
Name and date submitted (3 pts):

Create space in the Word document below, and write or type your answers. Turn in your completed work by the due date.

This is an open-book exam. You may use your textbook and the Internet to research the questions.

(100 questions, 1 point each average, 100 points total)

The Basics

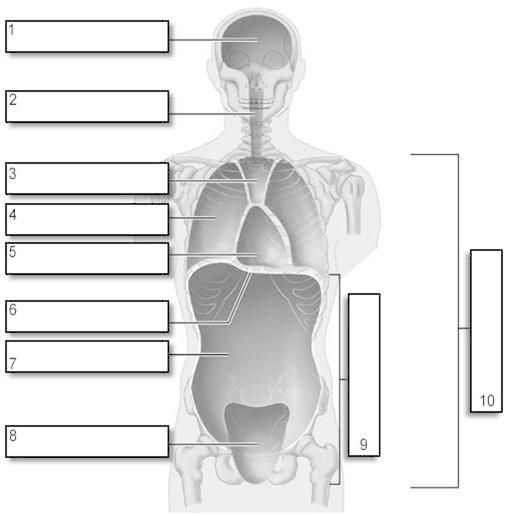


1. Identify the three anatomical planes shown

A.

B.

C.

1. Identify the following (7) body cavities and/or parts

1)

2)

4)

5)

6)

7)

8)

1. The major categories of organic molecules in your body are (choose the best answer)
2. Proteins, lipids, water, blood plasma
3. Carbohydrates, proteins, sugars, saliva
4. Lipids, proteins, carbohydrates, nucleic acids
5. Water, blood, saliva, proteins
6. Lipids include F\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and O\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
7. Proteins are made of long strings of A\_\_\_\_\_\_\_\_\_ A\_\_\_\_\_\_\_ bonded together and folded up.
8. Identify these (4) parts of a ‘long bone’. (Examples of long bones are the femur and the humerus)
9. The shaft of the bone is called….
10. The end of the bone nearest the body trunk is called….
11. The end of the bone furthest from the body trunk is called….
12. Technical name for the ‘growth plate’ is….
13. Identify these bone cells
14. Cells that build-up bone are called…
15. Cells that break down bone are called…
16. Mature cells that ‘maintain’ the bone are called…
17. Give the “common” names of the following (12) bones
18. Cranium (example: “skull”)
19. Mandible
20. Maxilla
21. Clavicle
22. Scapula
23. Humerus
24. Radius
25. Ulna
26. Pelvis
27. Femur
28. Tibia
29. Fibula
30. Patella
31. Spine: Arrange these (5) from superior to inferior
32. Cervical
33. Coccyx
34. Lumbar
35. Sacrum
36. Thoracic
37. Hand bones: Arrange these (3) from proximal to distal
38. Metacarpals
39. Phalanges
40. Carpals

Muscle Tissue

1. Explain what is meant by the “sliding filament mechanism” of muscle contraction. Your answer must include the (5) words “actin, myosin, M line, Z disc, and sarcomere”.

Muscular System

1. Give the common name of each muscle, and what it moves or what it does. Use correct words like “extension” and “flexion”.

|  |  |  |
| --- | --- | --- |
|  | Common name | What does it move? What does it do? |
| Gluteus maximus | Example: Butt muscle | This group of muscles extends (extension) the upper leg bone (the femur) allowing you to walk, squat, and jump |
| Rectus abdominis |  |  |
| Hamstrings |  |  |
| Gastrocnemius |  |  |

1. Continued from above…

|  |  |  |
| --- | --- | --- |
|  | Common name | What does it move? What does it do? |
| Quadriceps |  |  |
| Biceps |  |  |
| Deltoid |  |  |
| Pectoralis major |  |  |

1. Continued from above…

|  |  |  |
| --- | --- | --- |
|  | Common name | What does it move? What does it do? |
| Soleus |  |  |
| Trapezius |  |  |
| Latissimus dorsi |  |  |
| Triceps |  |  |

1. Ordinarily, the attachment point of a muscle to the stationary bone is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
2. The attachment point of a muscle to the movable bone is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_.
3. T/F: Tendons connect muscle-to-bone.
4. T/F: Ligaments connect bone-to-bone.
5. In producing movements, bones act as L\_\_\_\_\_\_\_\_\_\_\_, and joints function as the F\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
6. When the arm is raised like you’re reaching up to catch something, what joint functions as the fulcrum?
7. An example of a first-class lever is the head resting on the vertebral column. In this example
   1. What is the fulcrum (use correct anatomical terms)
   2. What is the effort
   3. What is the load
8. An example of a second-class lever is when you stand up on your toes. In this example
   1. What is the fulcrum (use correct anatomical terms)
   2. What is the effort
   3. What is the load
9. An example of a third-class lever is the bones of the arm and forearm. In this example
   1. What is the fulcrum (use correct anatomical terms)
   2. What is the effort
   3. What is the load
10. Exhibit 11.13 – Muscles of the arm that move the forearm: Flex your arm like you’re curling a dumbell….
    1. Which group of muscles is contracting?
    2. Which group of muscles must relax so that you can flex your arm?
11. Exhibit 11.17 – Muscles that move the femur (thigh bone): What is the origin of most muscles that move the femur?

Nervous System

1. The branch of medical science dealing with the nervous system is called \_\_\_\_\_\_\_\_\_\_
2. A physician who specializes in the nervous system is called a \_\_\_\_\_\_\_\_\_\_\_\_\_
3. The central nervous system (CNS) consists of \_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. The peripheral nervous system (PNS) consists of \_\_\_\_\_\_\_\_\_\_\_\_
5. Three functions of the nervous system. Explain what each is and does.

|  |  |  |
| --- | --- | --- |
|  | What is it? | What does it do? |
| Sensory |  |  |
| Integrative |  |  |
| Motor |  |  |

1. Name the two subdivisions of the nervous system

1. Explain the structure and function of the “cell body”
   1. Structure:
   2. Function:
2. Explain the structure and function of the “dendrites”
   1. Structure:
   2. Function:
3. Explain the structure and function of the “axon”
   1. Structure:
   2. Function:
4. What are Schwann Cells, and what is their function?
5. What is meant by “myelination”?
6. Explain “resting membrane potential” to an intelligent 5th grader
7. How many millivolts (mV) is a typical resting potential?
8. What is the synaptic cleft?
9. How long is the synaptic delay in milliseconds (msec)?
10. Fig. 12.23: Explain how signal transmission occurs at a chemical synapse.
11. Explain how nerve impulses are passed from one neuron to the next at the synapse. Be specific.
12. Drugs of Abuse: Explain how Cocaine affects neurotransmission. Be specific. Explain the actual physiological mechanism.

Special Senses

1. You have 10-100 million smell receptors contained in your olfactory epithelium. *Olfact* = \_\_\_\_\_
2. The olfactory epithelium consists of olfactory receptors, supporting cells, and basal cells. Briefly explain the structure AND function of each

|  |  |  |
| --- | --- | --- |
|  | Describe its structure | Explain its function |
| Olfactory receptors |  |  |
| Supporting cells |  |  |
| Basal cells |  |  |

1. *Gust* = \_\_\_\_\_\_\_\_\_\_\_
2. List the five primary tastes
3. Each of your 10,000 taste buds consists of supporting cells, gustatory receptor cells, and basal cells. Explain the structure AND function of each

|  |  |  |
| --- | --- | --- |
|  | Describe its structure | Explain its function |
| Supporting cell |  |  |
| Gustatory receptor cell |  |  |
| Basal cell |  |  |

1. More than \_\_\_\_\_\_\_\_\_\_ of your sensory receptors are located in the eyes.
2. In the electromagnetic spectrum, *visible light* ranges from about \_\_\_\_\_\_\_\_ nm to \_\_\_\_\_\_\_\_\_\_ nm in wavelength.
3. Describe the structure AND function of the cornea
   1. Structure:
   2. Function:
4. Describe the structure AND function of the sclera
   1. Structure:
   2. Function:
5. Describe the structure AND function of the iris
   1. Structure:
   2. Function:
6. Describe the structure AND function of the pupil
   1. Structure:
   2. Function:
7. Describe the structure AND function of the retina
   1. Structure:
   2. Function:
8. What is the function of rods?
9. What is the function of cones?
10. Lacrimal Apparatus: *Lacrim* = \_\_\_\_\_\_\_\_\_\_\_\_
11. Give the structure AND function of the auricle
    1. Structure:
    2. Function:
12. Give the structure AND function of the tympanic membrane
    1. Structure:
    2. Function:
13. Give the decibels (dB) of
    1. Rustling leaves \_\_\_\_\_
    2. Whispered speech \_\_\_\_\_\_
    3. Normal conversation \_\_\_\_\_\_
    4. Vacuum cleaner \_\_\_\_\_\_\_\_\_
14. Continued from above…
    1. Shouting \_\_\_\_\_\_\_\_
    2. Nearby motorcycle or jackhammer \_\_\_\_\_\_\_\_
    3. Uncomfortable threshold \_\_\_\_\_\_\_
    4. Painful threshold \_\_\_\_\_\_\_\_

Digestive System

1. Human digestive system: Briefly state the role/function of each, and how it contributes to the overall digestive system.

|  |  |
| --- | --- |
|  | Role: What does it do? What does it contribute? |
| Mouth | Example: chewing (mastication) of food, and has enzymes which start breaking down carbs |
| Parotid gland |  |
| Esophagus |  |
| Stomach |  |
| Liver |  |

1. Continued from above…

|  |  |
| --- | --- |
|  | Role: What does it do? What does it contribute? |
| Pancreas |  |
| Gallbladder |  |
| Sm. intestine |  |
| Lg. intestine |  |
| Rectum |  |

The Blood

1. Cardiovascular System: cardio = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, vascular = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. The cardiovascular system consists of three interrelated components
3. The branch of science concerned with blood is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. State the three functions of blood
5. The “formed elements” of blood include three principal components
   1. R
   2. W
   3. P
6. Red Blood Cells (RBCs) are called Erythrocytes: erythro = \_\_\_\_\_\_\_\_\_\_\_\_, cyte = \_\_\_\_\_\_\_\_\_\_\_\_
7. The oxygen carrying protein in RBCs is called \_\_\_\_\_\_\_\_\_\_\_
8. What is the diameter in µm of an RBC ?
9. The condition where too-little oxygen enters the blood is known as h\_\_\_\_\_\_\_\_\_\_\_\_
10. White Blood Cells (WBCs) are called L\_\_\_\_\_\_\_\_\_\_\_\_\_\_
11. Platelets are called T\_\_\_\_\_\_\_\_\_\_
12. Table 19.3: How do platelets stop bleeding?
13. The surface of your Red Blood Cells (RBCs) contain special antigens called A\_\_\_\_\_\_\_\_\_\_\_
14. Your blood plasma contains antibodies called A\_\_\_\_\_\_\_\_\_\_\_.
15. Anemia: symptoms and causes?
    1. Symptoms
    2. Causes
16. Sickle-Cell Disease: symptoms and causes?
    1. Symptoms
    2. Causes
17. Leukemia: symptoms and causes?
    1. Symptoms
    2. Causes

Lymphatic System & Immunity

1. What is meant by the term “pathogen”?
2. What is meant by the term "barrier immunity"?
3. What is meant by the term "innate" immune system?
4. What is meant by the term "adaptive" immune system?
5. What is a virus and how does it work?
6. What is it? I mean really, what is it?
7. How does it operate?
8. How does a vaccine work? What is the mechanism by which it works?
9. How does it work? I mean really, how does it work?
10. How can foreign bacteria enter the body? List at least 5 “routes of entry”.
    1. Example: through the lungs

Respiratory System

1. The respiratory system consists of (complete each word)
   1. N
   2. P
   3. L
   4. T
   5. B
   6. L
2. Anatomical term for “throat” \_\_\_\_\_\_\_\_\_\_\_\_
3. Anatomical term for trap door which seals off airway during swallowing \_\_\_\_\_\_\_\_\_\_\_\_
4. Anatomical term for “windpipe” \_\_\_\_\_\_\_\_\_\_\_\_
5. Each lung is surrounded and protected by a membrane called \_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. Inhalation is technically called \_\_\_\_\_\_\_\_\_\_
7. Air moves into the lungs (choose best answer)
   1. Because your nose and mouth function together with your lungs to push air down the trachea, filling the lungs as needed
   2. Because your diaphragm muscle flattens or lowers, increasing the volume of the lungs, thus drawing air into the lungs due to pressure difference
   3. Because your diaphragm muscle contracts and raises, drawing the right amount of air into the expanding lungs
   4. Because when your autonomous nervous system senses that you need a breath, it causes the lung muscles in the right and left lobes to expand, thus increasing lung volume and drawing air down the trachea
8. Exhalation is technically called \_\_\_\_\_\_\_\_\_\_\_
9. The volume of one breath is called \_\_\_\_\_\_\_\_\_\_
10. The volume of air inhaled and exhaled each minute is called \_\_\_\_\_\_\_\_\_\_\_\_\_
11. Hemoglobin: The heme portion of hemoglobin contains four \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, each capable of binding to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
12. Hemoglobin (choose best answer)
    1. Is a protein molecule contained within white blood cells (leukocytes) that carries oxygen and carbon dioxide
    2. Is a protein molecule contained within red blood cells (RBC’s) that carries oxygen to, and carbon dioxide from, the body
    3. Is a protein molecule contained within red blood cells (RBC’s) that carries oxygen and glucose (blood sugar)
    4. Is a protein molecule contained within red blood cells (RBC’s) that carries oxygen from, and carbon dioxide to, the body

Metabolism & Nutrition

Since you just completed the homework for this Unit, it will not be repeated on the final exam