Instructions: For each histology question, pick the one best answer. This histology test bank is also useful for the histology questions on the USMLE (USMLE step 1).

1.
Which cell is a also called a septal cell?
a. Clara cell
b. Type I pneumocyte
c. Type II pneumocyte
d. Dust cell
e. Brush cell

Answer: c

The Clara cell is found in the terminal bronchioles. The type I pneumocyte is a squamous epithelial cell. It covers most of the surface of the alveoli. The type II pneumocyte is also called a septal cell. The type II pneumocyte secretes surfactant. The dust cell is also called the alveolar phagocyte. Brush cells are occasionally, but rarely, seen in the alveolar epithelium.

2.
Which cell is a respiratory macrophage?
a. Kupffer cells
b. Histiocyte
c. Dust cell
d. Langerhans cell
e. Microglia

Answer: c

Macrophages are mononuclear phagocytes. Many tissues have resident (fixed) macrophages. Fixed macrophages are given a unique name, depending on the tissue that they are located in. Kupffer cells are the hepatic macrophages. Histiocytes are macrophages seen in connective tissue. Dust cells are alveolar macrophages found in the respiratory tract. Langerhans cells are macrophages seen in the skin. Microglia are the central nervous system macrophages.

3.
Which cell is a type of neuron?
a. Basal cells
b. Brush cells
c. Olfactory cells
d. Sustentacular cells
e. All of the above

Answer: c

Olfactory mucosa lines the roof and portions of the walls of the nasal cavity. It contains several cell types: basal cells, brush cells, olfactory cells and sustentacular cells.

Basal cells are located in the basal lamina. Brush cells are involved with general sensation of the olfactory mucosa. Olfactory cells are bipolar neurons that are the receptors for smell. Sustentacular cells are supporting cells. Sustentacular cells are most numerous cell type in the olfactory epithelium.

4.
What cell types are found in the respiratory mucosa?
a. Ciliated cells
b. Goblet cells
c. Basal cells
d. Brush cells
e. All of the above

Answer: e

In man, respiratory mucosa is composed of ciliated pseudostratified columnar epithelium with goblet cells. Respiratory mucosa contains several cell types: ciliated cells, goblet cells, basal cells, and brush cells. Respiratory mucosa is located lining the respiratory segment of the nasal cavity. It lines the conchae and the paranasal sinuses.

5.
What type of tissue makes up the epiglottis?
a. Compact bone
b. Spongy bone
c. Hyaline cartilage
d. Fibrocartilage
e. Elastic cartilage

Answer: e

The epiglottis is part of the larynx. It is composed of elastic cartilage.

6.
What is the smallest airspace of the respiratory tree?
a. Alveolar duct
b. Alveoli
c. Alveolar sac
d. Respiratory bronchiole
e. Terminal bronchiole

Answer: b

The respiratory tract is made of branching structures, much like the branches of a tree. The trachea branches into two bronchi which branch into smaller bronchi. The bronchi ultimately branch into smaller bronchioles. Bronchioles are distinguished from bronchi in that they do not have cartilage and submucosal glands. The terminal bronchioles are the last part of the airway in which gas exchange does not occur. Terminal bronchioles lead to the respiratory bronchioles. The respiratory bronchioles are the first section of the respiratory tree that gas exchange can occur. The alveoli duct is analogous to a thoroughfare with many cul-du-sacs branching off of it. At the end of the alveoli duct is an alveoli sac. An alveoli sac is a cluster of alveoli, much like a cluster of grapes. Alveoli are individual sacs where gas exchange occurs.

7.
What type of epithelium lines the trachea?
a. Simple squamous epithelium
b. Simple cuboidal epithelium
c. Simple columnar epithelium
d. Stratified squamous epithelium
e. Pseudostratified epithelium

Answer: e

The trachea is lined by pseudostratified squamous epithelium. Epithelium lines body cavities and surfaces. Pseudostratified squamous epithelium is "pseudostratified" because it is only one cell layer thick, yet it appears to be stratified. In reality, every cell touches the basement membrane.

Note from Sarah Bellham: The prefix "pseudo" is of Greek origin and it means false or counterfeit. For example: pseudonym, pseudo-science or pseudostratified.

8.
Which structure is part of the conducting portion of the airway?
a. Bronchi
b. Alveolar ducts
c. Alveoli
d. Alveolar sacs
e. Respiratory bronchioles

Answer: a

The conducting portion of the airway is where air is moved, warmed and moistened. The nasal cavities, pharynx, larynx, trachea and bronchi are all part of the conducting portion of the airway.

The respiratory portion of the airway is where gas exchange occurs. The respiratory bronchioles, alveolar ducts, alveolar sacs and alveoli are all part of the respiratory portion.

9.
What type of epithelium lines the vestibule?
a. Simple squamous epithelium
b. Simple columnar epithelium
c. Stratified squamous epithelium
d. Ciliated pseudostratified epithelium with goblet cells
e. Transitional epithelium

Answer: c

The vestibule is lined by stratified squamous epithelium.

10.
Which cartilage of the larynx is made of hyaline cartilage?
a. Thyroid cartilage
b. Cricoid cartilage
c. Arytenoid cartilage
d. Corniculate cartilage
e. All of the above

Answer: e

The larynx is composed of several cartilages. The thyroid cartilage, cricoid cartilage, arytenoid cartilages, corniculate cartilages and cuneiform cartilages are all composed of hyaline cartilage. The epiglottis is elastic cartilage. There is no fibrocartilage in the larynx.