Answers

2.11 Respiratory System

462. a + b – c + d + e +

463. a + b + c + d - e +
The olfactory epithelium is a columnar, pseudostratified epithelium. It contains small basal cells with branching processes that form a single layer in the basal part of the epithelium. There are supporting cells, which have a well-developed terminal web and apical microvilli. Bipolar neurons are found between the basal cells and supporting cells and these are the true olfactory cells. The lamina propria of the olfactory mucosa is richly vascularized and innervated. It contains tubuloalveolar glands with PAS-positive seromucous cells. These olfactory surface and are continuously secreting in order to moisten and clean the apical apart of the olfactory cells and retain their readiness to respond to new olfactory stimuli

464. a – b + c + d + e +
Stratified, squamous, no-keratinized epithelium can be found in the oropharynx, laryngeal pharynx and larynx.

465. a + b – c + d + e +
The epithelium of the internal nostrils is a pseudostratified, ciliated epithelium containing goblet cells.

466. a + b + c - d + e -
Functions of the nasal cavity include warming and moistening inspired air and trapping foreign bodies or dust particles.

467. a + b + c - d - e +
Dust entering the respiratory passage is trapped by cilia and mucus secreted by goblet cells. The dust cells are macrophages that engulf dust particles that reach the lungs.

468. a – b + c + d + e -
The respitory epithelium of the conducting portion of the respiratory tract is lined with pseudostratified ciliated columnar epithelium, which possesses mucus-secreting goblet cells.

469. a + b – c – d + e +
The larynx connects the pharynx to the trachea and is the site of the vocal cords. Both hyaline and elastic cartilages are present in the walls of the larynx.

470. a + b – c + d – e -
The true vocal cords are composed of elastic ligaments (thyrocrytenoid ligaments). The vocal cords are lined with stratified squamous epithelium and are

attached to intrinsic (thyroartenoid) muscle, which control the tension of the true vocal cords.

471. a + b – c – d + e +

472. a – b + c + d + e +
The trachea has incomplete rings of hyaline cartilage connected by smooth muscle fibers. The trachea is lined with pseudostratified, columnar epithelium and has abundant goblet cells and mucous glands that open into the lumen. A dense elastic membrane separated the mucosa from the submucosa.

473. a + b+ c + d + e +

474. a – b – c – d + e +
The nasopharynx, larynx trachea, bronchi and terminal bronchioles all belong to the conducting portion of the respiratory system. Gaseous exchange only occurs in the respiratory bronchioles and alveolar sac, both of which belong to the respiratory portion of the respiratory system.

475. a + b + c + d + e +
Large bronchi of the respiratory tract have pseudostratified ciliated epithelium (though in the smaller branches of bronchi the epithelium may be simple columnar with cilia). Next to the mucosa is a smooth muscle layer bundles, which completely surround the bronchi. The bronchi have hyaline cartilage surrounded by a perichondrium and connective tissue rich in elastic fibers. The adventitial layer has abundant lymphatic nodules, especially where the bronchi branch.

476. a + b – c – d + e +
Bronchioles are intralobular, tubular structures with a diameter of 1 mm or less. They lack cartilage, glands or lymphatic nodules. They have a lamina propria composed mainly of elastic fibers. The smooth muscle layer, adjacent to the mucosa, is better developed than that of bronchi and during asthmatic attacks it may be necessary to use drugs to relax this smooth muscle. For example, epinephrine acts as a stimulator of the sympathetic nervous system, which innervated these bronchiolar muscles and these results in decreased airway resistance.

477. a + b + c + d – e -

478. a + b + c – d + e -
The respiratory bronchioles are continuous with the alveolar ducts. The alveoli open into the alveolar ducts, which have walls that contain smooth muscle elastic and collagen fibers. The alveolar ducts are the last segments of the respiratory system that have smooth muscle in their walls. The interalveolar wall has flattened (squamous) cells and great alveolar (septal) cells. These cell types lie in a basal lamina. In addition there are alveolar pores providing air passage between

adjacent alveolar walls. No smooth muscle is found in the alveolar wall. Macrophages (dust cells) are found in the alveolai.

479. a + b + c – d + e +

480. a + b – c + d – e +
The great alveolar cells (septal cells, type 11 cells) have tight junctions binding them to adjacent epithelial cells. These great alveolar cells are rounded or cuboid and have abundant microvilli on their free surfaces. Multilamellar bodies, the source of the respiratory surfactant, are present in the cytoplasm. The surfactant is phospholipids that is essential for correct respiratory function and decreases the surface tension of alveoli. Lack of respiratory surfactant in premature babies is a major source of respiratory distress syndrome and infant mortality.

481. a + b – c – d – e +
The dust cell in lungs alveoli are phagocytic cells and are belived to originate from monocytes. They are included in the Mononuclear Phagocytic System (MPS).

482. a + b – c + d + e +
Pleura, which envelops the lungs, is a serous membrane lined with mesothelium and has both visceral and parietal elements. The space between the visceral and parietal pleura is lubricated by serous exudates derived from the blood plasma, and during lung inflation and deflation allows the apposed pleural membranes to slide smoothly over each other.