

16- Airway resistance in a patient with asthma:

- A. Is raised by increasing lung volume.
- B. Is reduced by inhaling β 2-agonists.
- C. Is increased by destruction of alveolar walls.
- D. Is unaffected by secretions in the airways.
- E. Is increased by loss of bronchial smooth muscle.

17- During an exercise test on a patient with mitral stenosis, it was found that the respiratory exchange ratio of expired gas rapidly rose above 1 at a low level of exercise. A likely reason is:

- A. Abnormally high levels of lactate in the blood.
- B. Abnormally low ventilation.
- C. Abnormally high cardiac output.
- D. Increased lung compliance.
- E. Reduced diffusing capacity of the lung.

18- A 41-year-old woman complains of acute dyspnea and chest pain. She is sent for a ventilation-perfusion scan in which she inhales radiolabeled xenon and receives an injection of technetium-labeled macroaggregated albumin. Using a gamma camera, images are recorded that reflect the ventilation and perfusion throughout each lung. The ventilation images reveal a homogenous pattern of activity throughout the entirety of both lungs, while the perfusion images show a large area with no activity in the left lower lobe. Based on these results, what is the most likely cause of her dyspnea and chest pain?

- A. Asthma exacerbation
- B. Chronic obstructive pulmonary disease exacerbation
- C. Myocardial infarction
- D. Pneumothorax
- E. Pulmonary embolism

19- A 65-year-old man with a long history of smoking presents with one year of worsening dyspnea on exertion. On auscultation, he has scattered expiratory musical sounds and a prolonged expiratory phase. A chest radiograph reveals large lung volumes, flattened diaphragms, and decreased lung markings in the apical regions, while spirometry shows a reduced FEV1 and FVC and FEV1/FVC of 0.62. Which of the following would you expect to observe on further pulmonary function testing?

- A. Decreased total lung capacity
- B. Decreased airway resistance
- C. Decreased lung compliance
- D. Increased diffusion capacity for carbon monoxide
- E. Increased functional residual capacity