

**28- A 16-year-old girl with a history of asthma is brought into the emergency department with chest tightness and wheezing that have not improved despite using her inhaled bronchodilator. On exam, she has an oxygen saturation of 92% breathing ambient air, use of accessory muscles of respiration, and diffuse musical sounds on expiration. An arterial blood gas is drawn and shows a Pco<sub>2</sub> 33 mm Hg and Po<sub>2</sub> 62 mm Hg. The Po<sub>2</sub> improves to 90 mm Hg with administration of 2 L/min of oxygen by nasal cannula. Which of the following is the most likely cause of her hypoxemia?**

- A. Diffusion impairment
- B. Hyperventilation
- C. Hypoventilation
- D. Shunt
- E. Ventilation-perfusion mismatch

**29- A 67-year-old man, who is a lifelong nonsmoker, complains of worsening dyspnea and dry cough over a 6-month period. On exam, he has a fast respiratory rate and is taking small breaths. He has fine crackles (crepitations) in the lower lung zones on auscultation and finger clubbing. A chest radiograph shows low lung volumes and reticulonodular opacities in the bilateral lower lung fields. Which of the following results would you expect to see on pulmonary function testing in this patient?**

- A. Increased FEV<sub>1</sub>
- B. Increased FVC
- C. Increased FEV<sub>1</sub>/FVC ratio
- D. Increased TLC
- E. Increased airway resistance when related to lung volume

**30- The arterial hypoxemia of a patient with diffuse interstitial pulmonary fibrosis:**

- A. Typically worsens on exercise.
- B. Is chiefly caused by diffusion impairment.
- C. Is associated with a large increase in diffusing capacity during exercise.
- D. Is usually associated with carbon dioxide retention.
- E. Is improved during exercise because of the abnormally large increase in cardiac output.

**31- In a patient with diffuse interstitial fibrosis of the lung, the maximal expiratory flow rate at a given lung volume may be higher than in a normal subject because:**

- A. Expiratory muscles have a large mechanical advantage.
- B. Airways have a small diameter.
- C. Dynamic compression of the airways is more likely than in a normal subject.
- D. Radial traction on the airways is increased.
- E. Airway resistance is increased.