42- A 61-year-old woman with no history of smoking is admitted to the hospital with 2 days of worsening dyspnea and a nonproductive cough. On examination, her blood pressure was normal, and she had an elevated jugular venous pulsation, a third heart sound, no murmurs, diffuse crepitations on lung auscultation, and bilateral leg edema. A chest radiograph showed cardiomegaly and diffuse bilateral opacities, while an echocardiogram performed shortly following admission showed a dilated left ventricle with a low ejection fraction of 30% and an increased estimated pulmonary artery systolic pressure of 50 mm Hg. Which of the following most likely accounts for her pulmonary hypertension?

A. Granulomatous inflammation in the pulmonary arterioles
B. Left heart failure
C. Increased pulmonary blood flow
D. Medial hypertrophy and intimal thickening of the pulmonary arterioles
E. Occlusion of the pulmonary vascular bed by recurrent thromboemboli

43- A previously healthy 22-year-old man in a high-altitude mountain hut at 4,500 m for 3 days develops severe dyspnea with minimal exertion and a cough productive of pink-tinged sputum. His oxygen saturation by pulse oximetry is found to be abnormally low. Auscultation reveals bilateral crackles in both lungs. Which of the following mechanisms is most likely responsible for this man ' s condition?

A. Decreased colloid osmotic pressure
B. Decreased interstitial pressure
C. Increased left atrial pressure
D. Endotoxin-mediated increase in capillary permeability
E. Exaggerated hypoxic pulmonary vasoconstriction

44- A 57-year-old man with known very severe COPD who continues to smoke cigarettes presents to his doctor with increasing weight gain and bilateral lower leg edema over several weeks. On examination, he has an elevated jugular venous pulsation and bilateral lower leg edema that extend to his knees. An electrocardiogram shows right ventricular hypertrophy and right axis deviation. Which of the following is the most appropriate diagnostic test at this time?

A. Bronchoscopy
B. CT scan of the chest without contrast
C. Echocardiography
D. Spirometry
E. Duplex ultrasonography of the lower extremities

45- Concerning smog:

A. Ozone is mainly produced in automobile engines.
B. A temperature inversion occurs when the air near the ground is hotter than the air above.
C. The main source of sulfur oxides is the automobile.
D. Nitrogen oxides can cause inflammation of the upper respiratory tract.
E. Scrubbing flue gases is ineffective in removing particulates.