Cardiac Physiology Quiz (Quiz #4)

1. After vigorous exercise, heart rate decreased 50% and cardiac output decreased 33% from values of 200 bpm and 12 L/min during exercise, respectively. What were the stroke volumes during and after exercise, respectively?
   - A) 0.006 and 0.004L
   - B) 40 and 60 ml
   - C) 60 and 40 ml
   - D) 100 and 60 ml
   - E) 60 and 80 ml

2. The atrioventricular (A-V) valves prevent the backflow of blood
   - A) from atria to ventricles during contraction
   - B) from ventricles to atria during contraction
   - C) from the pulmonary arteries and aorta during relaxation or filling stage
   - D) and are termed the mitral valve on the right side and the tricuspid on the left side
   - E) none of the above

3. A normal pressure-volume loop for a single beat of the left ventricle most likely indicates that
   - A) the ejection and filling phases represent isotonic changes in sarcomere length
   - B) pressure is highest during diastolic filling
   - C) the mitral valve opens at the end of isovolumetric contraction
   - D) as pressure falls during ventricular ejection, the aortic valve opens
   - E) the isovolumetric contraction and relaxation phases represent isotonic changes in sarcomere length

4. At a stroke volume of 70 ml/beat, an end diastolic volume of 150 ml and heart rate of 60 bpm, the
   - A) cardiac output is 4.0 L/min
   - B) ejection fraction is 0.50
   - C) end systolic volume is greater than the end diastolic volume
   - D) end systolic volume is greater than the stroke volume
   - E) end systolic volume is equal to the stroke volume

5. In the normal cardiac cycle, the lowest left ventricular volume is most closely associated with
   - A) closure of the mitral valve
   - B) opening of the aortic valve
   - C) the T wave of the ECG
   - D) the P wave of the ECG
   - E) the QRS complex of the ECG

   \[ C.O. = \frac{HR}{R} \cdot (EUV - ESV) \]
   \[ ESV = EUV - ESV \]
   \[ SV = ESV \cdot ESV \]
   \[ ESV = 150 - ESV \]