HSS 307: Human Physiology
Quiz 4
Name_____

Please circle the correct response(s). There may be 0-4 correct responses for each item. Assume normal healthy conditions unless otherwise stated.

1. The following are examples of extrinsic regulation of heart rate:
    a. Sympathetic innervation of ventricular myocardium (P.386-7, FIG.13.23; AS SHOWN, THIS ONLY AFFECTS VENTRICULAR CONTRACTILITY, NOT HEART RATE)
    b. SA node impulses (P.371, P.386; HEART RATE IS TRIGGERED BY SA NODE, WHICH IS AN INSTRINSIC FACTOR BUT REGULATED ONLY BY EXTRINSIC FACTORS)
    c. Parasympathetic innervation via the vagus nerve to the SA node (FIG.13.23)
    d. Afterload (P. 391; AFTERLOAD AFFECTS STROKE VOLUME, NOT HR)

2. At rest, in arteries, as compared to veins:
    a. At any one point in the blood vessel, pressure varies due to pulse pressure (FIG.14.9; PULSE PRESSURE DRIVES THE PRESSURE VARIATION DUE TO SYSTOLIC AND DIASTOLIC PRESSURES. THESE PEAKS AND VALLEYS ARE LONG GONE IN THE VEINS.)
    b. Pressure drops are much greater (FIG.14.3; ABOUT THE SAME)
    c. Flow velocity is higher (FIG.14.16)
    d. Compliance is less (P.404 AND P.419; COMPLIANCE, WHICH IS $\Delta V/\Delta P$, MUST BE GREATER IN VEINS)

3. The following Starling forces, individually increased (i.e., the others stayed constant) by 3 mmHg on the venule end, could result in net absorption across the capillary:
    a. P_{CAP} (FIG 14.20; A P_{CAP} INCREASE ON EITHER END ENCOURAGES MORE FILTRATION)
    b. P_{IF} (FIG 14.20; A P_{IF} INCREASE ON EITHER END ENCOURAGES MORE ABSORPTION – 3mmHG IS ENOUGH TO CHANGE THE BALANCE TO A NET ABSORPTION)
    c. π_{CAP} (FIG 14.20; A π_{CAP} INCREASE ON EITHER END ENCOURAGES MORE ABSORPTION – 3mmHG IS ENOUGH TO CHANGE THE BALANCE TO A NEW ABSORPTION)
    d. π_{IF} (FIG 14.20; A π_{IF} INCREASE ON EITHER END ENCOURAGES MORE FILTRATION)