Chapter 14

Question 14.5

(a) $R = \frac{4}{22}$ = **0.18 kPa L^{-1} min^{-1}**

(b) $R = \frac{4.75}{50}$ = **0.09 kPa L^{-1} min^{-1}**. Therefore, **there is vasodilation in the systemic circulation during exercise**

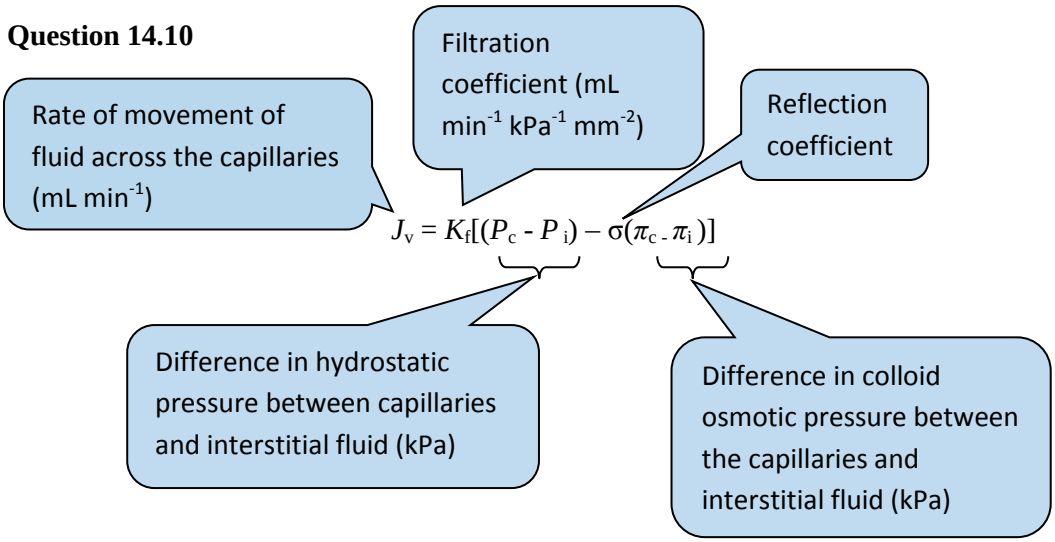
Question 14.6

(a) Total resistance ($\boldsymbol{R_{tot}}$) = 5 + 2.5 + 2 + 3.3 + 5 + 2.5 = **20.3 kPa L^{-1} min^{-1}**

(b) $\frac{1}{R_{tot}} = \frac{1}{5} + \frac{1}{2.5} + \frac{1}{2} + \frac{1}{3.3} + \frac{1}{5} + \frac{1}{2.5}$ = 0.2 + 0.4 +0.5 + 0.3 + 0.2 + 0.4 = 2

Therefore, $\boldsymbol{R_{tot}} = \frac{1}{2}$ = **0.5 kPa mL^{-1} min^{-1}**

Question 14.10



So, the filtration pressure across the walls of the capillaries between the fluid in the capillaries and the interstitial fluid is:

$(P_c - P_i) - \sigma(\pi_c - \pi_i)$

= (1.0 + 0.3) – 0.845(3.3 – 2.1)

= 1.3 – 1.02 = 0.28 kPa.

As the pressure is higher on the inside of the capillaries, **fluid flows from the capillaries to the interstitial tissue.**