(i) baseline hazard is where all \( z_i = 0 \). Here that is a female life given existing treatment at time of diagnosis

(ii)

(a) \( z_1 = \frac{1}{12} \), \( z_2 = 1 \), \( z_3 = 1 \)

\[ h(t) = h_0(t) \left\{ 0.5 \times b_{12} \right. \]

\[ + 0.01 \times 1 - 0.05 \times 1 \}

\[ = h_0(t) e^{0.21} \]

(b) \( S(t) = \exp \left[ - \int_0^t h(s) \, ds \right] \)

\[ = \exp \left[ - \int_0^t h_0(s) e^{0.21} \, ds \right] \]

\[ = \exp \left[ - e^{0.21} \int_0^t h_0(s) \, ds \right] \]

\[ = \exp \left[ - \int_0^t h_0(s) \, ds \right] e^{0.21} \]
(iii) For this female life

\[ h(t) = h_0(t) \exp \left( 0.5 \times 0 + 0.01 \times 1 - 0.05 \times 0 \right) \]

\[ = h_0(t) \exp \left( 0.01 \right) \]

and

\[ s(5) = 0.75 = \exp \left[ - \int_0^5 h_0(s) \, ds \right] \exp \left( 0.01 \right) \]

\[ \therefore \exp \left[ - \int_0^5 h_0(s) \, ds \right] = (0.75) \exp (-0.01) \]

And then for the male life

in part (ii)

\[ s(5) = \exp \left[ - \int_0^5 h_0(s) \, ds \right] \exp (0.21) \]

\[ = (0.75 \exp (-0.01)) \exp (0.21) \]

\[ = 0.7037 \]