Questions

For a controlled plant described by transfer function:

$$G_p(s) = \frac{0.04(s+1)}{s^2 + 0.2s + 0.04}$$

1. Design a digital controller of the form

$$D(z) = K\frac{z-A}{z-B}$$

   by emulation, i.e. the $G_c(s)$ to $D(z)$ conversion method. A reasonable sampling period needs to be selected.

2. Design a deadbeat digital controller under a reasonable sampling period.

The objectives are that the controlled system should:
1) Track step input with a reasonably small steady state error and a settling time faster than the open loop settling time.
2) Do so with the minimum input action that is reasonably possible.
3) Do so with the minimum overshoot that is reasonably possible.
4) The design procedure should be systematic.

Requirements for Report
- Clearly describe the design procedure and use diagrams to show the system performance that is achieved by the designs.
- Explain how the objectives 1)-3) are considered in your designs.