

Assignment #2

January 25, 2023

Q2. The mathematical model of a chemical process gives the following Process Transfer function.

$$G(s) = \frac{5}{(s+2)(s+3)(s+4)(s+5)}$$

- a) Find an equivalent first order with dead time (FODT) model using moment method.
- b) Find an equivalent second order with dead time model having equal time constants $\frac{K e^{-\theta s}}{(\tau s+1)^2}$ using moment method.
- c) Calculate MAPE for case a) and b).
- d) Calculate the ultimate controller gain for the original process, estimated FODT process and estimated SODT process.

Please Note

1. Use of MATLAB except numerical calculation is not allowed.
2. Hand written answer script should be submitted to the TA.
3. **Last date of submission: February 01, 2023**