

MEEN 2210 Electromechanical Engineering Systems Spring 2011

Studio Quiz #7 Studio Period # 21 April 5, 2011

Name: _____ Session: _____

1. Write the differential equation of a PID controller with gains K_p , K_i , and K_d , relating the input error signal $e(t)$ and the output control signal $m(t)$.
2. Write the transfer function in terms of the differential operator D of the PID controller described in question #1.
3. Write the difference equation of a PID controller with Gains K_0 , K_1 , and K_2 , relating the discrete input error signal e_n and the discrete output control signal m_n .
4. Write the discrete transfer function in terms of the backshift operator B of the PID controller described in question #3.
5. How are the differential operator D and backshift operator B related to the Laplace Transform variable s and the Z Transform variable z ?