

EE 422 Mathematical Economics 2 (1/2016)

Assignment 6

The due date for this assignment is (Thursday) 8th December 2016.

Solve the following problem (10 points each)

1. Maximize $\int_0^1 (y - u^2) dt$

subject to $y'(t) = u(t)$ and $y(0) = 2$, $y(1)$ is free

2. Maximize $\int_0^8 6y dt$

subject to $y'(t) = y(t) + u(t)$ and $y(0) = 10$, $y(8)$ is free $u(t) \in [0, 2]$

3. Maximize $\int_0^T (yu - u^2 - y^2) dt$

subject to $y'(t) = u(t)$ and $y(0) = y_0$, $y(T)$ is free

4. Maximize $\int_0^{20} -\frac{1}{2} u^2 dt$

subject to $y'(t) = u(t)$ and $y(0) = 10$, $y(20) = 0$

5. Maximize $\int_0^T (K - \alpha K^2 - I^2) dt$

subject to $K'(t) = I(t) - \delta K(t)$ and $K(0) = K_0$, $K(T)$ is free
 $\alpha > 0$ and $\delta > 0$.