Lecture 21 Worksheet (ECON211), AY 2025-26 [Date: 16 Sep 2025]

1. The demand function is given by: $p = e^{-x/2}$. Calculate the consumer surplus when $p = 0.5$.

2. Find the marginal utility and the marginal rate of substitution for the following utility function: $u = min(x, y)$

3. Find the extreme values of $f(x, y) = 8x^3 + 2xy - 3x^2 + y^2 + 1$.

4. A monopolist named *Batata* sells a product called *Basalt* in two different markets: *Nalasopara* (A) and *Vashi* (B). The demand in the two markets is $P_A = 120 - 0.5Q_A$ and $P_B = 60 - 0.25Q_B$. The total cost is given by $C = 20(Q_A + Q_B)$. Calculate the equilibrium quantity and price.