Assignment – Parameter Estimation

General Instructions – Must Read

- Complete the assignment by hand using pen and paper. After finishing, scan your work and convert it into a single PDF file.
- The submission link will remain open at all times. However, assignments submitted after the due date will receive only 50% of the total marks. No excuses will be accepted for late submissions.
- Plagiarism will not be tolerated—any copied content will result in zero marks.
- Ensure your work is neatly done, clearly scanned, and submitted in PDF format only.

Questions [Required]:

1. Let $(X1, X2, \ldots, Xn)$ be a random sample of size n taken from a Normal Population with parameters: mean $\theta 1$ and variance $\theta 2$. Find the Maximum Likelihood Estimates of these two parameters.

$$f(x) = \frac{1}{\sqrt{2\pi\sigma^2}} e^{\frac{-(x-\mu)^2}{2\sigma^2}}$$

2. Let X_1, X_2 . . . ,X_n be a random sample from B(m, θ) distribution, where θ ∈Θ = (0, 1) is unknown and 'm' is a known positive integer. Compute value of θ using the **Minimum Mean Square Error Estimation.**