

Assignment-II

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Q-1 Given the probability distribution function of binomial distribution is

$$f(n, x_i) = \binom{n}{x_i} p^{x_i} (1-p)^{n-x_i} \quad \forall i=1, 2, \dots, n$$

Find its maximum likelihood estimate for 'p'.

Q-2 For the Gamma distribution $G(x; \alpha, 1)$. Find maximum likelihood for ' α ' when ' x ' is treated as constant.

Q-3 Obtain the ML estimator of $\alpha + \beta$ for the Uniform distribution having the following p.d.f

$$f(x; \alpha, \beta) = \begin{cases} \frac{1}{\beta - \alpha} & \text{for } \alpha \leq x \leq \beta \\ 0 & ; \text{otherwise} \end{cases}$$

Q-4 Let x_1, x_2, \dots, x_n represents a random sample from each of the distribution having the following p.d.f.

$$(a) \quad f(x; \theta) = \theta x^{\theta-1}, \quad 0 < x < 1, \quad 0 < \theta < \infty, \\ 0, & \text{else where}$$

$$(b) \quad f(x; \theta) = \frac{1}{2} e^{-(x-\theta)}, \quad -\infty < x < \infty, \\ -\infty < \theta < \infty$$

In each case find MLE $\hat{\theta}$ for θ .