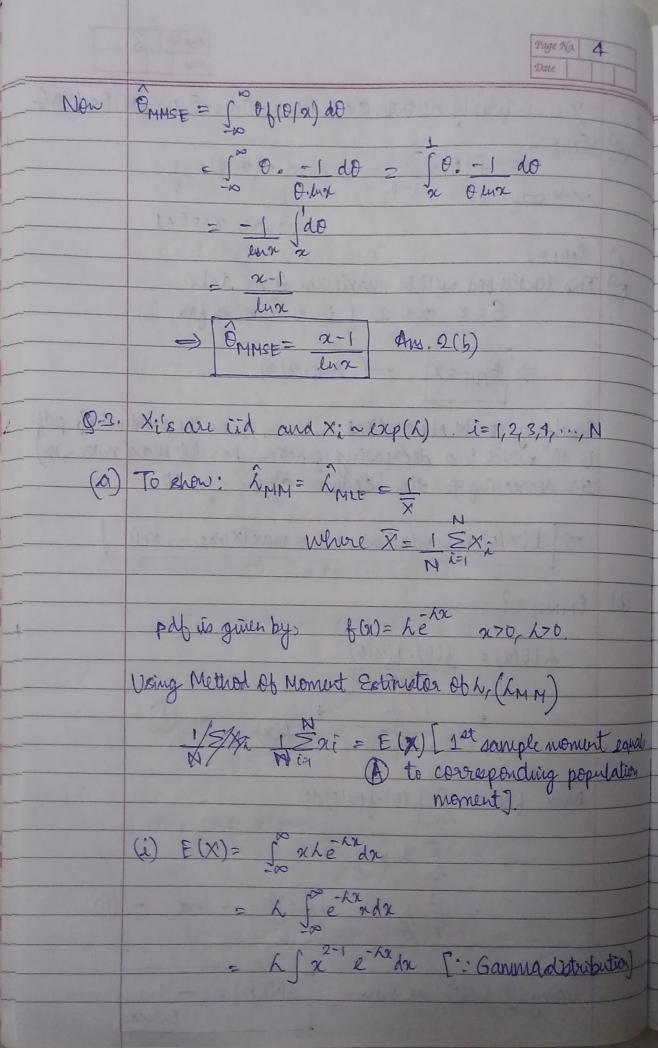
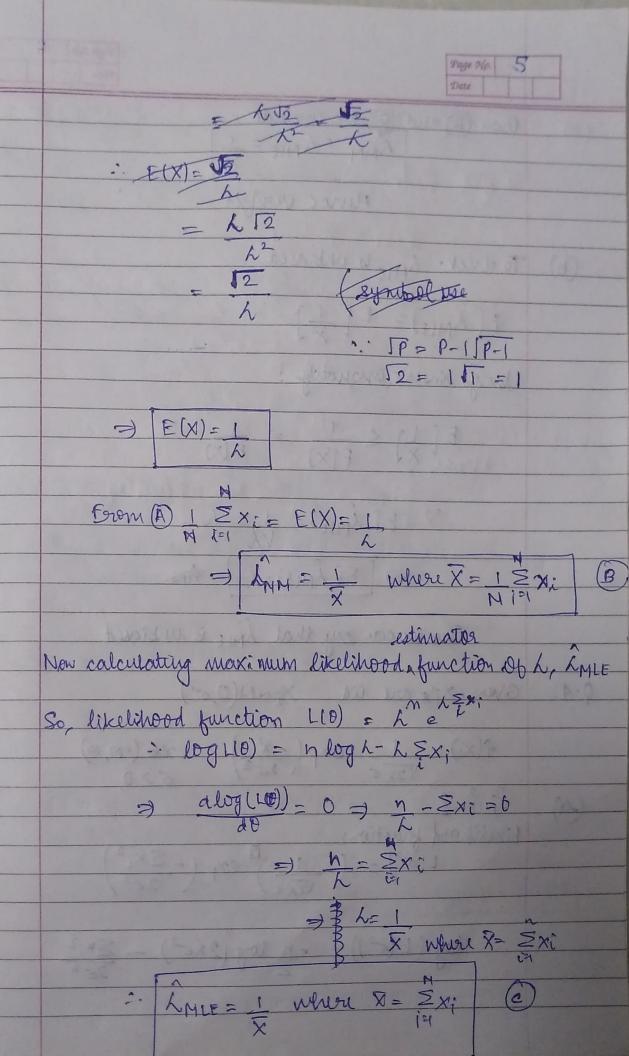
	DE Assignment 4		
James t	Ziwal Rustagi	Page No.	1
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-			301 1
4	Probability of generating 1 = 0 Probability of generating 0 = 1-0		
		VII.R.	
	f(0)= 60(1-0) 0=0<1		
	TAM S		
	X ~ number of 1/8 Observed in a block of 1	data	
	Clearly X ~ Bi(H,0)		
a)	PALE = 2	4	
-11	We know $f(x/0) = {}^{n}C_{x} \theta^{x} (1-0)^{n-x}$		
	$\gamma = 0$	1,2,	, M
	: a ln(f(x/o)) = 0		
	$\frac{1}{20} \frac{2 \ln(f(X/0))}{20} = 0$	vig uve	3
all	AND A CHANGE		
	du (f (2/0)) = lu (Cx) + x lu 0 + (M-	x) lu []	-0)
	- 1 1010(0)		
	$2 \ln \left(f(x \theta) \right) = \chi - n - \chi = 0.$	ulary (1) 10
	90 0 1-0	10	
	= 2 - N-2 0 1-0	All I	
		18/100	
	1-0 - N-X	7	
	Applying C&D, we get		
	1-0+0 n-x+x		
	1-0+0 n-x+x	atua A	
	= 10=2		
	$\Rightarrow \theta = \chi$		
	X A I WAR TO SEE THE SECOND SE		
	Thus OMLE = 2 Ans I (a)		
	YI		
	where x = no. of 1's in buck o	& Ndo	ta.

Page Na OMAP=2 (b) 2h(f(0)) + 2h(f(0/0)) | du(f(0)) = du(6) + du(0) + du(1-0) $\frac{\partial \ln(f(\theta))}{\partial \theta} = \frac{1-\theta-\theta}{1-\theta} = \frac{1-\theta-\theta}{1-\theta}$ Eron priv. que (a) 2 m(+(210)) = 2 n-2 20 0 1-0 () evaluates to [using () and ()) $\left(\frac{1}{\theta} - \frac{1}{1-\theta}\right) + \left(\frac{x}{\theta} - \frac{y-x}{1-\theta}\right) = 0$ (1+x)- (1+n-x)=0. 1-0 1+N-X Applying CAD weget 1-0+0 = 1+n-x+1+x =) PHAP= 1+2 AN 1(b)

	Page No. 2 Date
Q-2.	X is uniformly distributed between 0 and D. where 0 ~ U(0,1).
	$\frac{\partial \mathcal{L}}{\partial \mathcal{L}} = \frac{1}{2}$ $\frac{1}{2} + \frac{1}{2} = \frac{1}{2} \text{and} f(\alpha \alpha) = \frac{1}{2}$ $\frac{1}{2} + \frac{1}{2} = \frac{1}{2} \text{and} f(\alpha \alpha) = \frac{1}{2}$
	where x <= 021
(a)	PMLE = 2
(F)	This likelihood will be maximum if we take
	D=2 and as 1 is decreasing for
	$\Rightarrow \widehat{\Theta}_{ME} = x \rightarrow Anc. 2(\alpha)$
	Similarly for N observations X1, X2, XN as the product of pdf
	is 0" which is a decreasing function for 0> max(x,xx, xx) It is decreasing function because 2lul - n <0
	It is decreasing function because alul n 50
	=> [=L(x(0) is maximized at 0 = max(x1,x2,,xN).]
(6)	ÊMNSE=?
	UMMSE -
	f(0/2) = f(0), f(2/0)
	b (2)
	$= \frac{1 \cdot 1}{0 \cdot 1} = \frac{1 \cdot 1}{0 \cdot 1} = 0$
1000	+4(x) = 0.4(x)
	New L(x) = [L(p)-L(x(p)d0
	Non P(x) = \(\begin{array}{c} \phi \hat(x) \\ \phi \end{array} \rightarrow \hat(x) \\ \phi \\ \ph \\ \phi \\
	= 1 x 1: do
	-00 O
	$= \int_{\mathcal{X}}^{1} \frac{1}{0} d\theta = \left[\ln \theta \right]_{\alpha}^{1} = -\ln \alpha - \left[\Pi \right]$
Links	CONTRACTOR OF THE STATE OF THE
	Using (1) in (1), we have $f(0) = -1$

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Henre weitjich.

Using Tenser's inequality

$$\frac{\text{E[1]} \leq 1}{\text{E[X]}} = \frac{1}{\text{E(X)}}$$

This we can any that Lyle is unbiased

(0)

$$f(x) = \frac{1}{\sqrt{2\pi}} \exp\left(-\frac{x^2}{26^2}\right) \quad \chi \in (-\infty, \infty)$$

Likelihood functions.
$$L(\sigma^2) = \left(\frac{1}{\sqrt{2}\pi}\sigma\right)^2 \exp\left(-\frac{2\pi i^2}{2\sigma^2}\right)$$

$$\log (L(c^2)) = -n \log (2\pi c^2) - \frac{2\pi c^2}{2c^2}$$

$$\frac{h}{2c^2} = \frac{\sum_{i=1}^{2} x_i^2}{2c^4}$$

$$= \int_{0}^{2} \frac{1}{x_i^2} = \int_{0}^{2$$

By using Crameriskan Bound inquality, the lower bound of Lation MVVE is

$$\frac{\partial \log L(0)}{\partial 0} = \frac{-n}{2} \times \frac{2\pi}{2\pi^{-2}} + \frac{\sum x_i^2}{26^4}$$

$$= \frac{\sum x_i^2}{26^4} = \frac{n}{26^2}$$

$$= \frac{267}{n} \left[\frac{2\pi^2}{n} - 6^2 \right]$$

=) The variance onle = 207

By CR inequality, we can say that since is efficient.

Hence werified.

(0)

B= 1 (0-1)

To find: BMLE.

: BMLE = B(BMLE)

BALE = 1 (ENLE-1)

 $=\frac{1}{2}\left[\frac{1}{N}\sum_{x_{1}}^{2}-1\right]$

= 1 [Z [xi2-1]]

Hence

BMLE = 1 5 (22-1) And (c)