KING FAHD UNIVERSITY OF PETROLEUM & MINERALS DEPARTMENT OF MATHEMATICS & STATISTICS DHAHRAN, SAUDI ARABIA

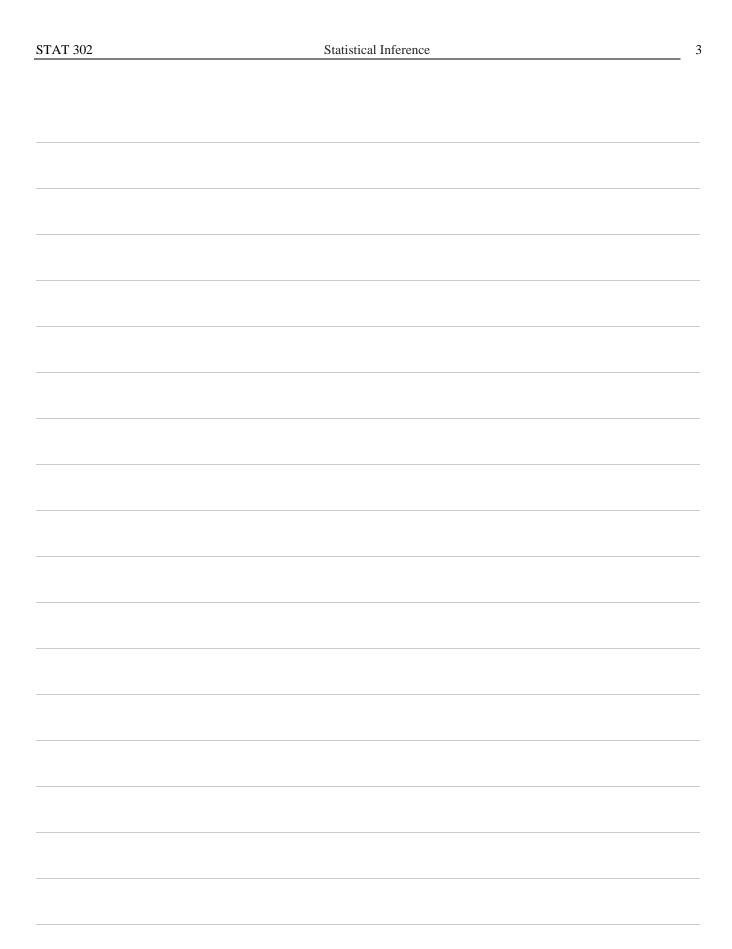
STAT 302: Statistical Inference

Semester 151, Final Exam Subjective Sunday December 20, 2015, 7:00 – 9:00 pm

Name: ID #:

Question No	Full Marks	Marks Obtained
1	45	
2	15	
3	10	
4	15	
Total	85	

STAT 302	Statistical Inference 2			
Q.No.2:- (9+6=15 points)				
(a) Given the nine sample val	ues from a normal distribution with mean μ and variance 4. Find the best			
critical region for testing H_0 : $\mu = 4$ against H_1 : $\mu > 4$ of size 0.005. Give your decision if the sample				
values are 4.5, 6.5, 3.8, 4.2, 7.7, 8.5, 9.4, 5.3, 3.9.				
values are 4.5, 0.5, 5.0, 4.2, 7.1	, 0.5, 7. 1 , 5.5, 5.7.			



STAT 302	Statistical Inference
(b) Is the test derived in part (a) uniformly	aly most powerful unbiased (UMPU) test? Why? Justify you
answer.	



 $\frac{\text{STAT } 302}{\text{Q.No.3:-} (8+2=10 \text{ points})}$

(a) Find Ba	yes estimato	or of the sin	gle param	eter θ of th	e Poisson	distribution	$(f(x;\theta) = \frac{e^{-\theta}}{x}$	$\frac{d^{2}\theta^{x}}{dx}$ for $x=$
0, 1, 2,		it is known					ma distributio	

STAT 302	Statistical Inference	7

Q.No.4:- $(5+4+3+3=15 \text{ points})$ Let Y_1, Y_2, \dots, Y_n be a random sample from the Poisson distribution				
with mean λ .				
(a) Find the MLE $(\hat{\lambda})$ for λ .				

STAT 302	Statistical Inference	10
(b) Find the expected value and vari	ance of $\hat{\lambda}$.	
(1)		