PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2017
(Fourth Semester)

- Branch - STATISTICS

STATISTICAL INFERENCE -1

Time : Three Hours ' Maximum : 75 Marks (

SECTION-A (20 Marks)

Answer ALL questions

ALL questions carry EQUAL marks (10 x 2 = 20)

1 Define point estimation.
2 When do you say an estimator is efficient.
3 ' State asymptotic efficiency of an estimator.
4 What do you mean by sufficient statistic?
5 Give any two methods of estimation.
6 Define likelihood function.
7 Define standard error.
8 . What is confidence co-efficient?
9 Define order statistics. *
10 When do you use non-parametric tests.

SECTION - B (25 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks (5 x 5 = 25)

11 a Prove that the sample mean from N(p, a^2) is consistent for p.

OR

b Prove that minimum variance unbiased estimator is unique. *

12 a Let Xj, x_2,..... x_n be a random sample from N(p, CT2), find the sufficient estimator for p.

OR

b State and prove Rao - Blackwell theorem.

13 a Explain briefly about method of moments.

OR

b Describe briefly about method of minimum % .

14 a Obtain 100(l-a)% confidence interval for p when small samples are taken from N(p, CT^2). *

OR

b Write a short note on Baye's estimation.

15 a Explain briefly about distribution of order statistic.

,OR

b Write a short note on sign test.

SECTION - C (30 Marks)

Answer any THREE Questions

ALL Questions Carry EQUAL Marks (3 x 1 0 = 30)

16 State and prove Cramer - Rao inequality.*

17- Let xY, i = 1, 2, 3, ...:n are random sample from f(x, 0) = exp {-(x - 0), ' 0 < x < oo, -oo < 0 < PO, obtain sufficient statistics for 0.

18 Show the sample mean $\bar{x}$ in random sampling from $f(x, 0) = \frac{1}{H} e^{-x/0}$

0 < x < oo, 0 < 0 < oo, is an MLE of 0 and has variance $0^2/n$.

19 Find 100(l-oc)% confidence interval for difference of two proportions. *

20 Explain the procedure to find goodness of fit bv Y^2 - test