PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2018
(Fourth Semester)

Branch - **STATISTICS**

STATISTICAL INFERENCE !

Time : Three Hours Maximum : 75 Marks

SECTION-A (20 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (1 0 x 2 = 20)

1 Define Unbiasedness.

2 When the estimator is said to be efficient.

3 State Neyman's factorization theorem.

4 Define Sufficiency.

5 Define MLE.

6 Sate the two properties of MLE.

7 Define interval estimation.

8 Define standard error and give its uses.

9 Define Order Statistics.

10 What is meant by Nonparametric test.
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SECTION - B (25 Marks)
Answer **ALL** Questions
ALL Questions Carry **EQUAL** Marks (5 x 5 = 25)

1 1 a Write down the properties of a good estimator.

OR

b If If $x_{]5}$ X_2.....xn is random sample from a normal population N(//,l)

show that t = —]T"$_{=]}X'$ is an unbiased estimator of ju^2+1.

12 a State and prove the invariance property of consistent estimator.

OR

b Show that the sample mean *x* is sufficient for estimating the parameter of the Poisson distribution.

13 a Explain methods of moments.

OR

b Explain minimum chi-square methods.

14 a Construct 95% confidence interval fpr mean of a normal population in small sample.

OR

b Construct 95% confidence interval for the variance of a normal population in small sample.

15 a Write the distribution of lowest and highest of the oberservations.

OR

b Explain about 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 Sate and prove Rao Blcakwell theorem.

18 In the random sampling from normal population N(/ACT^2) , find the MLE for p and a^2.

19 A sample of 900 members has a mean 3.4 cms and sd 2.61 cms? Is the sample from population of mean 3.25 cms & sd 2.61 cms. If the population is normal and its mean is unknown, find the 95% and 99% confidence limit.

20 Describe the X test for Goodness of fit.

Z-Z-Z END