

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

**
MSc DEGREE EXAMINATION DECEMBER 2018
(Fourth Semester)

Branch - STATISTICS

STATISTICAL INFERENCE -II

Time: Three Hours

Maximum: 75 Marks

Answer ALL questions
ALL questions carry EQUAL marks (5 x 15 = 75)

1 a Explain the following :

- (i) Type I and Type II Errors
- (ii) Size and level of the test function
- (iii) Power function
- (iv) Non-randomized test
- (v) Randomized test

OR

b State and prove the Neymann - Pearson lemma for randomized test.

2 a Define Ump and Umpu.

b Define similar test and state the relationship between Umpu and Ump similar test.

OR

c Explain unbiased test and the need for an unbiased test.

d Explain : (i) Invariant test (ii) Confidence bounds.

3 a Explain the likelihood ratio test.

b Show' that LR test will be the same MP test given by the NP lemma when H and K are simple.

OR

c If $X \sim N(\mu, \sigma^2)$ and σ^2 is known. Obtain the LR test for testing $H: \mu = \mu_0$ against $K: \mu > \mu_0$.

4 a Explain : SPRT.

b If $X \sim B(n, p)$. Obtain the SPRT for testing the $H: p = p_0$ against $K: p < p_0$.

OR

c Explain OC function of the SPRT.

d Prove that SPRT will eventually terminate with probability one for $H: p = p_0$ against $K: p < p_0$.

5 a Describe Kolmogorov - Smirnov one sample test.

b Explain : Empirical distribution function.

OR