14STP18

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 ~N(p, a^2) and o^2 is known. Obtain the LR test for testing $H : n = //_0$ against K : // = //,(> $//_0$).

4 a Explain : SPRT.

b If X ~ B(l, 0). Obtain the SPRT for testing the $H:G = 9_0$ against $K\backslash G = G_X$.

OR

c Explain OC function of the SPRT.

d Prove that SPRT will eventually terminate with probability one for $H . 9 = O_0$ against $K \backslash G - G_X$.

5 a Describe Kolmogorov - Smirnov one sample test.

b Explain : Empirical distribution function.

OR