Programme: MSc. (Statistics)   **Part-1**   **Semester-2**

Practical- 2.3.3   **Non Parametric Test (One Sample)**

1) A salesman paid 12 visits to his area sales manager and noted that he had to wait 10,15,20,17,11,25,30,27,36,40,5 and 26 minutes, respectively, before being called in his office. The area sales manager claims that the salesmen wishing to meet him do not have to wait for more than 20 minutes before being called in. Using the sign test, verify at 0.05 level of significance the claim made by the area sales manager.

2) Solve example 2 using a signed rank test.

3) The following eight observations are drawn from continuous symmetric population:
-1, 6, 13, 4, 2, 3, 5, 9. Test the hypothesis at the level of significance 0.05 that the median of the population is 8.9 against two sided alternative. Use Wilcoxon singed rank test.

4) A large company instituted an Industry Safety Program to minimize the number of man hours lost due to accidents. The data below show the number of man hours lost in a month at each of eight different plants before and after the safety program was established. Has the safety program been effective in reducing time lost from accidents?

Plant	Before	After
1	51.2	45.8
2	46.5	41.3
3	24.1	15.8
4	10.2	11.1
5	65.3	58.5
6	92.1	70.3
7	30.3	31.6
8	49.2	35.4

Use (i) sign test   (ii) Signed rank test at level of significance 0.05.

(5) Test the null hypothesis that the data below are from one - parameter exponential distribution'

1.5,2.3,4.2,7.1,10.4, 8.4,9.3,6.5,2.5,4.6.

ks.test(data,punif,0,1))

(6) The 20 observations below were selected randomly from the continuous uniform distribution over (0,1). Using the K-S test, test the hypothesis that square roots of these numbers also have continuous uniform distribution. Use alpha=0.05.

0.0123, 0.9634, 0.1954, 0.1039, 0.9249, 0.8871, 0.2621, 0.3217, 0.2802, 0.6889, 0.8320, 0.7621, 0.3919, 0.3645,0.6541,0.5846,0.6275,0.5139,0.4240,0.4812.

(7) Generate 50 observations from normal distribution with mean 5 and variance 2. Using K-S test check whether it is from normal distribution.