**College of Engineering Pune**

**Probability and Statistics**

**F.Y.B. Tech. Semester (Computer Branch) 2023-24**

**Assignment 6: Testing of hypothesis using R (Sign test, Wilcoxon’s Signed Rank test)**

Q1. The time (in minutes) that a patient has to wait in a consulting room before being seen by doctor is recorded for 12 patients as follows:

17,15,20,20,32,28,12,26,25,25,35,24

Use Wilcoxon’s signed ranked test to test whether the median waiting time is more than 20 minutes at 5% l.o.s

Q2. Following are data on ten randomly selected specimen of certain material subjected to stress and the fatigue life’s (in kilocycles)

612,619,631,628,643,640,655,649,670,663

Apply a sign test to test the hypothesis that population median fatigue life is 625 against the alternative hypothesis that is greater than 625 at 5% l.o.s

Q3. The following data represents the number of hours that a rechargeable hedge trimmer operates before a recharge is required.

1.5, 2.2, 0.9, 1.3, 2.0, 1.6, 1.8, 1.5, 2.0, 1.2, 1.7

Use Wilcoxon’s signed ranked test to test the hypothesis that this particular trimmer operates with median of 1.8 hours before requiring a recharge.

Q4. The median age of tourist visiting to certain place is claimed to be 41 years. A random sample of 17 tourists have the ages.

25, 19, 38, 52, 57, 39, 46, 46, 30, 49, 27, 39, 44, 63, 31, 67, 42

Use the sign test to test the claim at 5% level of significance.

Q5.A student tells her parents that the median rental rate for a studio apartment in Portland is $700. Her parents are skeptical and believe the rent is different. A random sample of studio rentals is taken from the internet; prices are listed below. Test the claim that there is a difference using α = 0.10. Should the parents believe their daughter?(Hint:Using Sign test)

700 650 800 975 855 785 759 640 950 715 825 980 895 1025 850 915 740 985 770 785 700 925