Assignment II

1. What do you mean by median test? Describe the procedure of median test.

2. Describe Kolmogorov Smirnov two sample test.

3. Describe the function and procedure of Mann Whitney U test.

4. A quality controller wishes to determine whether there is a difference in outcome between two different tools of software I and II. The following data shows the outcome of two different tools. Can the controller conclude that a difference exists? Use median test at 5% level of significance.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Software I | 24.0 | 16.7 | 22.8 | 19.8 | 18.9 |  |
| Software II | 23.2 | 19.8 | 18.1 | 17.6 | 20.2 | 17.8 |

Ans: (p=0.6, insig.)

5. The following are the performance score of 10 separate person under two software training X and Y:

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| X | 46 | 45 | 32 | 42 | 39 | 48 | 49 | 30 | 51 | 34 |
| Y | 44 | 40 | 59 | 47 | 55 | 50 | 47 | 71 | 43 | 55 |

Use median test to test the effectiveness of two training. Ans: (p = 0.089, insig.)

7. Life in years of two types of electric motor used in irrigation of farms are given below;

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Life (yrs) | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Number of motor M | 3 | 6 | 7 | 4 | 3 | 5 | 5 | 3 | 4 |
| Number of motor N | 4 | 3 | 5 | 6 | 3 | 2 | 4 | 7 | 6 |

Is there any significant difference between two types of motor? Use Kolmogorov Smirnov test at 0.05 level of significance. Ans: D= 0.15, insig.

8. Amount of time required to design website by software developers A and B are found as follows;

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Time (hrs) | 0 – 4 | 4 - 8 | 8 – 12 | 12 – 16 | 16- 20 |
| Number of website designed by A | 2 | 5 | 6 | 3 | 4 |
| Number of web sites designed by B | 3 | 4 | 2 | 5 | 3 |

Does A take more time than B to design website? Use Kolmogorov Smirnov test at 5% level of

Significance. Ans: D= 0.12, insig.

9. Two groups of date managers, one group consisting of trained ones, another groups not trained have the following number of correction required.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Trained | 78 | 64 | 75 | 45 | 82 |
| Untrained | 110 | 70 | 53 | 51 |  |

Use Mann Whitney U test to test if there is a difference between the two average number of correction of trained and untrained data manger. Ans: Uo=9, insig.

10. The nicotine contents of two brands of cigarettes, measured in milligrams was found to be as follows:

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Brand A | 2.1 | 4.0 | 6.3 | 5.4 | 4.8 | 3.7 | 6.1 | 3.3 |  |  |
| Brand B | 4.1 | 0.6 | 3.1 | 2.5 | 4.0 | 6.2 | 1.6 | 2.2 | 1.9 | 5.4 |

If there any significance difference between two brands of cigarettes. Use Mann-whitney U-test.

Ans: p=0.0729, insig.