| KAU University | Stat 453 | Second Semester-1429/1430 H |
|---|---|---|
| Science College | Final exam | Statistics Dep. |
| Student name: | | ID: |

**Question (1):**

**These data from problem with matched-subject design which rated from 1 to 15**

| participant | A | B | C | D | E |
|---|---|---|---|---|---|
| 1 | 3.9 | 4.1 | 4.2 | 4.1 | 3.3 |
| 2 | 9.4 | 9.5 | 9.4 | 9.0 | 8.6 |
| 3 | 9.7 | 9.3 | 9.3 | 9.2 | 8.4 |
| 4 | 8.3 | 8.0 | 7.9 | 8.6 | 7.4 |
| 5 | 9.8 | 8.9 | 9.0 | 9.0 | 8.3 |
| 6 | 9.9 | 10.0 | 9.7 | 9.6 | 9.1 |

**1) Create a data file for the previous data**

**2) Is there a significant difference between the medians of groups?**

**3) If these data indicating significant difference between the medians, make a suitable follow-up test between the medians of the two groups (A and B)?**

**Question (2):**

**Some researchers wanted to compare between three new types of medicines for treatment of anemia (فقر الدم), they selected a sample of 180 patients, 60 patients were given medicine (A), 60 patients were given medicine (B), and the last 60 patients were given medicine (C).**

**After a specific period of treatment, these patients were classified in terms of degree of anemia and the kind of medicine.**

**1) Create a data file and give the categories these names medicine and anemia degree:**

| | Degree of anemia | | | | Total |
|---|---|---|---|---|---|
| | none | simple | moderate | high | |
| Medicine A | 40 | 10 | 6 | 4 | 60 |
| Medicine B | 36 | 12 | 4 | 8 | 60 |
| Medicine C | 30 | 16 | 8 | 6 | 60 |
| Total | 106 | 38 | 18 | 18 | 180 |

**2) By using the suitable test, are these data indicating significant differences between the medicines used?**

**Question (3):**

**Choose the correct answer:**

**1- The test which evaluates whether the proportions for a two-category variable are equal to hypothesized values is:**

**a) Mann-Whitney *U* test** **b) Binomial test** **c) Kruskal-Wallis test**

**2- The ---------- test is an extension of the Wilcoxon test.**

**a) Friedman test** **b) Cochran test** **c) Sign test**

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**Question (4):**

**Three types of fertilizer (أسمدة) were randomly distributed for a group of farms (مزارع) which contain the same fruit; the test was done to decide if fertilizer effect was equal in the farms.**

**Ranks**

| | group | N | Mean Rank |
|---|---|---|---|
| crop | fertilizer 1 | 6 | 13.50 |
| | fertilizer 2 | 7 | 7.07 |
| | fertilizer 3 | 5 | 8.10 |
| | Total | 18 | |

**Test Statistics[a,b]**

| | crop |
|---|---|
| Chi-Square | 5.172 |
| df | 2 |
| Asymp. Sig. | .075 |

**1) The test used is ……..**

**2) The hypothesis are** $H_\circ$ :

$H_1$ :

**3) The sum of ranks for fertilizer (1) is ……**

**4) The conclusion for this test is …….....**

**…….**

**Question (5):**

**The following scores are the IQ test for 20 gifted students, is the lower quartile for these scores equal 50?**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **70** | **59** | **62** | **73** | **85** | **55** | **69** | **89** | **65** | **73** |
| **49** | **53** | **71** | **66** | **64** | **90** | **45** | **55** | **62** | **81** |

**Good luck**

**Mona Al-Zanbagi**