**UNIVERSITY OF BISKRA** **DEPARTMENT OF ENGLISH** **M2 - STATISTICS** **EXAM**

**FULL NAME:**_____ **DATE:** January, 18th, 2023 _____

**GROUP NUMBER:**_____ **TIME: 9**0 minutes **20**

## ACTIVITY ONE (10 points)

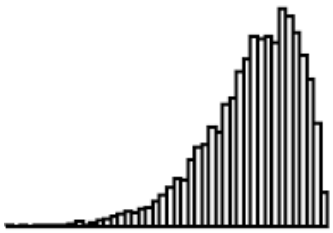
- Tick (✓) the correct answer. **(1 pts** for each answer**)**

**1.** Non-parametric test is used when the researcher:
- ◯ **A.** Recruits volunteers
- ◯ **B.** Recruits a sample size of more than 30 participants
- ◯ **C.** Seeks to reflect the population's characteristics
- ◯ **D.** Selects every member of the population

**2.** 73 students rated library services for 5 years (*1 = not effective, 10 = very effective*). The test used to assess the difference between the yearly ratings is:
- ◯ **A.** Kruskal-Wallis test
- ◯ **B.** Friedman test
- ◯ **C.** One-way ANOVA test
- ◯ **D.** Repeated Measures ANOVA test

**3.** Age group (e.g, 0 – 18, 19 – 30 …) is considered:
- ◯ **A.** Nominal data
- ◯ **B.** Ordinal data
- ◯ **C.** Interval data
- ◯ **D.** Ratio data

**4.** A Type 2 error happens when we:
- ◯ **A.** Accept a true null hypothesis
- ◯ **B.** Reject a true null hypothesis
- ◯ **C.** Accept a false null hypothesis
- ◯ **D.** Reject a false null hypothesis



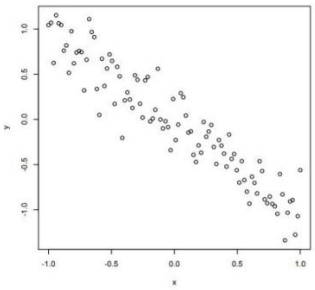
**5.** The histogram above shows:
- ◯ **A.** A normal distribution
- ◯ **B.** A negatively skewed distribution
- ◯ **C.** A positively skewed distribution
- ◯ **D.** None of the above

**6.** *P* = 0.03 in *Kolmogorov–Smirnov* test means:
- ◯ **A.** Data are normally distributed
- ◯ **B.** Data are not normally distributed
- ◯ **C.** Data are significant
- ◯ **D.** Data are not significant

**7.** A correlation between EFL learners' confidence level and their reported willingness to speak in the classroom requires:
- ◯ **A.** Pearson correlation
- ◯ **B.** Spearman correlation
- ◯ **C.** Multiple regression
- ◯ **D.** Point-Biserial correlation

**8.** Parametric statistical tests are used when:
- ◯ **A.** Participants are randomly recruited
- ◯ **B.** The data are interval
- ◯ **C.** The data are normally distributed
- ◯ **D.** All of the above

**9.** The null hypothesis ($H_0$) is:
- ◯ **A.** Positive
- ◯ **B.** Negative
- ◯ **C.** Directional
- ◯ **D.** Neutral



**10.** The plot above shows a correlation close to:
- ◯ **A.** -1
- ◯ **B.** -0.5
- ◯ **C.** +1.0
- ◯ **D.** +0.5

**Turn the page …**

## **ACTIVITY TWO** (5 points)

- Indicate the sampling approach described in each of the following statements.

| | |
|---|---|
| **1.** The researcher thinks that some subjects are more fit for the research compared to other individuals | **1. PURPOSIVE SAMPLING (1 pts)** |
| **2.** Used when the population has different groups and those groups need to be fairly represented in the sample | **2. STRATIFIED RANDOM SAMPLING (1 pts)** |
| **3.** Each unit in the population has an equal probability of being selected in the sample | **3.RANDOM SAMPLING (1 pts)** |
| **4.** The researcher asks the initial subject to identify potential participants | **4.SNOWBALL SAMPLING (1 pts)** |
| **5.** Involves taking samples according to some specified rule e.g., every fourth unit | **5. SYSTEMATIC SAMPLING (1 pts)** |

## **ACTIVITY THREE** (5 points)

- Calculate the sum, the sample mean, the sample variance, and the sample standard deviation for the grammatical accuracy results and report them in the table below.

| Algerian EFL learners | Grammatical errors | Chinese EFL learners | Grammatical errors |
|---|---|---|---|
| *Student 1* | 18 | *Student 1* | 29 |
| *Student 2* | 42 | *Student 2* | 51 |
| *Student 3* | 34 | *Student 3* | 35 |
| *Student 4* | 11 | *Student 4* | 21 |
| *Student 5* | 27 | *Student 5* | 42 |

**RESULTS**

| Groups | n (0,5 pts) | $\Sigma$ (0,5 pts) | $\bar{X}$ (0,5 pts) | $S^2$ (1,5 pts) | $S$ (1,5 pts) |
|---|---|---|---|---|---|
| Algerian EFL learners | **5** | **132** | **26.40** | **152.30** | **12.34** |
| Chinese EFL learners | **5** | **178** | **35.60** | **133.80** | **11.57** |

Assuming the data are not normally distributed, what is the most appropriate inferential statistical test to assess the difference between Algerian and Chinese EFL learners' grammatical errors?

The inferential statistical test is: **THE MANN–WHITNEY U TEST (0,5 pts)**