**THE OPEN UNIVERSITY OF SRI LANKA**
**FACULTY OF HEALTH SCIENCES**
**DEPARTMENT OF PSYCHOLOGY & COUNSELLING**
**ACADEMIC YEAR2022/2023– SEMSETER I**

**BSC HONS IN PSYCHOLOGY**
**PLU5305 – ADVANCED RESEARCH METHODS & STATISTICS IN PSYCHOLGOY**
**LEVEL 5**
**CONTINOUS ASSESSMENT TEST – NBT I**
**DURATION: 1.5 HOURS**

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DATE: 14th DECEMBER 2022 TIME: 11.30 AM – 1.00 PM

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**REGISTRATION NO: .....**

**IMPORTANT INSTRUCTIONS/ INFORMATION TO CANDIDATES**

- This question paper consists of **09 pages** with **TWO sections**

  **Section 1: 20 Multiple Choice Questions - (40 Marks)**

  **Section 2: 12 Short Answer Questions - (60 Marks)**

- Write your INDEX NO in the space provided.
- **Multiple Choice Questions (Section 1):** Indicate answers in the **ANSWER SHEET** provided by placing a cross **(X)** in **INK** in the relevant cage (answers in pencil will **NOT** be marked)
- **Short Answer Questions (Section 2):** Write the answer within the space provided.
- Do **NOT** remove any page/part of this question paper from the examination hall.
- Do **NOT** keep unauthorized materials, including mobile phones and other electronic equipment, with you during the examination

## SECTION 1: Multiple Choice Questions (20 Questions-40 Marks)

1.1 The data which have already been collected by someone is called,
a. primary data
b. secondary data
c. qualitative data
d. quantitative data

1.2 The weight of baby is a
a. quantitative, discrete variable
b. quantitative, continuous variable
c. qualitative, discrete variable
d. qualitative, continuous variable

1.3 Which one of the following is a branch of statistics?
a. Descriptive statistics
b. Inferential statistics
c. Both a and b
d. Quantitative statistics

1.4 Hypothesis: Vegetables will boil faster when the temperature of water is higher. What is the independent variable?
a. Boiling rate
b. Number of eggs
c. Amount of water
d. Water temperature

1.5 Which one of the following statements best describes qualitative research methods?
a. They place more attention on results than on meaning
b. Compared to quantitative designs; they place more attention on the participant's subjective experience.
c. Because researchers place a high priority on objective measurements and descriptions, they are more objective than quantitative designs.
d. They concentrate on quantifiable empirical observations.

1.6 Which one of the following is not a goal of scientific research in psychology?
a. Generalization
b. Description
c. Explanation
d. Prediction

1.7 Which one of the following statements best describes the "Quantitative" research?
a. They are always experimental
b. They are always based on numerical measurements
c. Data is always presented on an ordinal scale
d. Statistics are never used to answer the research question

1.8 In an experiment, the variable that researchers can influence, and change can be identified as
a. the dependent variable
b. the independent variable
c. the confounding variable
d. the response variable

1.9 The range of Pearson's r is from
a. 0 to 1
b. -1 to 1
c. 0 to 10
d. -1 to 10

1.10 Which one of the following graphical methods displays bivariate data?
a. Box-and-whisker plot
b. Histogram
c. Stem-and-leaf plot
d. Scatterplot

1.11 When two variables' values change in the same direction,
a. The correlation is said to be non-linear
b. The correlation is said to be linear
c. The correlation is said to be negative
d. The correlation is said to be positive

1.12 Regression modelling is a statistical technique for creating an equation that shows how
a. one explanatory and one or more response variables are related
b. one response variable and one or more explanatory variables are connected
c. more explanatory and response variables are related
d. one explanatory and only one response variables are related

1.13 Analysis of variance (ANOVA) is a statistical method of comparing the ..... of several populations.

a. means
b. variances
c. Standard deviations
d. Ranges

1.14 Rejecting the null hypothesis when it is true is known as

a. a Type I error
b. a Type II error
c. a standard error
d. a power of the test

1.15 Which of the following is true about conducting a two-way ANOVA?

a. After the main effects have been determined to be statistically significant, the interaction effect is tested.
b. If the interaction is determined to be statistically significant, the main effects are tested.
c. Only when a significant main effect or interaction is present are multiple comparisons between different groups made.
d. On all group pairs, you should first perform multiple comparisons using t tests before deciding whether to use an ANOVA depending on the pattern of statistical significance.

1.16 Which of the following is true?

a. Data that are ratios or intervals are used in parametric statistical tests.
b. Statistical tests that are parametric contain less assumptions than tests that are non-parametric.
c. In comparison to parametric statistical tests, non-parametric statistical tests are better adapted to handle data that are normally distributed.
d. Spearman's rank correlation coefficient is the parametric test that use to assess the relationship between two variables.

1.17 Which of the following is a correct statement about linear regression residual?

a. The location where the Y-axis and the line of best fit meet.
b. The deviation of the slope of the line from zero.
c. The difference between each raw data point from its predicted value.
d. The deviation of each raw data point from the midpoint of the best fitting line.

1.18 A researcher is examining how variables like room temperature, humidity, and illumination affect how many errors a person makes when playing a computer-based reaction time game. Which of the following statistical tests best matches the design of this study?

a. Linear regression
b. Chi-square test
c. Pearson correlation
d. Spearman rank correlation

1.19 A mean square is calculated in an ANOVA by:

a. dividing the sum of square by its degrees of freedom
b. dividing the F-statistic by the p-value
c. dividing the sum of squares by the number of participants
d. dividing the F-statistic by the standard error

1.20 Which of the following statements regarding a between-subjects one-way ANOVA is accurate?

a. The F statistic is a proportion of the between subject's variance and the within subject's variance.
b. The F statistic is a product of the mean difference from each group divided by the standard error.
c. The p-value is positively associated with the F statistic
d. The F statistic's degrees of freedom are determined by the total number of participants in the data set.

REGISTRATION NO: .....

## ANSWER SHEET FOR SECTION-1

| Q. No. | (a) | (b) | (c) | (d) |
|---|---|---|---|---|
| 1.1 | | | | |
| 1.2 | | | | |
| 1.3 | | | | |
| 1.4 | | | | |
| 1.5 | | | | |
| 1.6 | | | | |
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| 1.16 | | | | |
| 1.17 | | | | |
| 1.18 | | | | |
| 1.19 | | | | |
| 1.20 | | | | |

REGISTRATION NO: .....

## SECTION 2: SHORT ANSWER QUESTIONS (60 MARKS)

**All Questions are compulsory**

2.1 How do researchers use statistics in the field of psychology research? (Briefly explain).

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**(4 Marks)**

2.2 Briefly explain the term "Variable".

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**(4 Marks)**

**Read the following scenario and write the answers for the question from 2.3 to 2.5.**

A researcher aimss to examine if sunflowers would grow over 5 feet tall if given more water. In her test, 3 sunflower plants are given 1 liter of water each, and another 3 sunflower plants are given 0.5 liters each. After 30 days, the height of the plants is measured.

2.3 What is the independent variable?

**(2 Marks)**

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2.4 What is the dependent variable?

**(2 Marks)**

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2.5 Suggest one control variable for the test.**(2 Marks)**

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2.6 What's the difference between a mediator variable and a moderator variable?

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..... **(8 Marks)**

2.7 Explain the difference between Basic research and Applied research.

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**(8 Marks)**

2.8 Which type of data is collected in experimental research?

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**(2 Marks)**

2.6 Briefly explain Quantitative research.

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**(4 Marks)**

2.7 In what type of situation do researchers use logistic regression?

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**(4 Marks)**

2.8 Write two assumptions of the Pearson correlation coefficient.

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**(4 Marks)**

2.9 Write two assumptions of the ANOVA test.

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**(4 Marks)**

**Read the following scenario and write the answers for the question from 2.10 to 2.12.**

A study was conducted to determine whether weight loss is best achieved through diet type 1, diet type 2, or diet type 3. The dependent variable would be "weight loss," measured in kilograms, and the independent variable would be "diet type," which has three groups or levels: "diet type 1", "diet type 2," and "diet type 3".

2.10 What is the most suitable test that can be used to check the above claim?

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**(2 Marks)**

2.11 What are the null and alternative hypotheses?

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**(4 Marks)**

2.12 Briefly explain the difference between ANOVA and ANCOVA.

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**(6 Marks)**

----------END OF QUESTION PAPER----------