Mock exam "Multivariate Statistics", fall semester 2023

Linear regression

Linear regression (single choice) (Choice) - 1

Which of the following statements refers to an overfitting issue that may affect the quality of a linear regression model?
Decide which of the following statements is correct by clicking on a single box.

Overfitting does not affect the quality of the regression model.	☐
The estimated Y values and the empirical Y values correlate less than in reality.	☐
The residuals are bigger than they should actually be.	☐
The explained variance is consequently higher than it should be.	☐

Logistic regression

Logistic regression (single choice) (Choice) - 1

Which of the following statements about the interpretation of logit (also called: log odds) in logistic regression is correct?
Decide which of the following statements is correct by clicking on a single box.

The logit (or log odds) gives us an indication about the size of the effect	☐
The values of the logit (or log odds) range between 0 and 1	☐
For logit (or log odds), only the sign of the coefficient (and its associated significance level) can be interpreted	☐
Logit (or log odds) give us an indication about the magnitude of the implied change in the probabilities	☐

Moderation/Mediation

Moderation (Kprim) (Kprim) - 2

In a moderation mean centering is important. Why?
Decide whether the following statements are true or false by clicking the respective box.

	True	False
For changing the regression slope	☐	☐
For reducing effects of multicollinearity	☐	☐
It facilitates the interpretation of the effects	☐	☐
Because this way effects get standardized (from b to β)	☐	☐

ANOVA

Repeated Measures ANOVA (open-ended) (Essay) - 1

How do individual differences affect the F-statistic in repeated measures ANOVA?
Tips: think about the size of the F-statistics and about its statistical significance.

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Factor analysis (EFA/CFA)

EFA (open-ended) (Essay) - 2

List two formal tests that enable you to assess the suitability of a data set for conducting exploratory factor analysis.

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SEM

SEM (single choice) (Choice) - 1

Which of the following is <u>NOT</u> a typical model fit index used in structural equation modelling?
Decide which of the following statements is <u>NOT</u> correct by clicking on a single box.

Tucker-Lewis index (TLI)	☐
Root mean squared error of approximation (RMSEA)	☐
Adjusted R-square	☐
Comparative fit index (CFI)	☐

MLM

MLM (Kprim) (Kprim) - 2

Which of the following statements about multilevel modelling (MLM) are correct, and which are
incorrect?

Decide whether the following statements are true or false by clicking the respective box.

	True	False
MLM aims to correct for biased estimates resulting from the clustering of the observations (e.g. students nested in schools).	☐	☐
MLM decomposes the total variance of the dependent variable into the within-context variance and the between-context variance.	☐	☐
You might not want to use random effects when the number of factor levels is very low.	☐	☐
If the value of the ICC (Interclass Correlation Coefficient) is high, then use of a single level model.	☐	☐