

GENERAL RULES FOR THE EXAM

This exam consists of 15 questions with three response options (a, b and c) that must be answered by writing the option chosen on the answer sheet. Only one of the alternatives is correct. **The errors do not subtract score.** You have one hour and a half to answer the questions of this exam.

Questions

Case 1. Please, answer questions 1-2 with the following information.

The table presented below shows the total score obtained by 12 participants in two parallel tests of abstract reasoning composed of 15 items. At least 10 items have to be answered correctly to consider that the participants pass the tests.

Participants	1	2	3	4	5	6	7	8	9	10	11	12
Test A	10	14	11	12	12	10	9	11	10	8	10	11
Test B	9	13	10	10	12	10	8	10	10	6	11	7

1. Calculate the reliability coefficient on the assessment of fit between the two tests. Use the method proposed by Hambleton and Novick:
 - a) 0.53
 - b) 0.63
 - c) 0.83
2. The value of the Kappa reliability coefficient is:
 - a) Appropriate
 - b) Inappropriate
 - c) Ambiguous

Case 2. Please, answer questions 3-5 with the following information.

The scores obtained in a test were adjusted to a normal distribution. The mean obtained by the group was 10 and its standard deviation was 3. For a participant who obtained a raw score of 7 in the test, calculate:

3. The derived McCall's T typical score:
 - a) 40
 - b) 50
 - c) 60
 4. The score that would correspond on a derived scale with mean 20 and standard deviation 3:
 - a) 18
 - b) 17
 - c) 13
 5. The percentile that corresponds to the score obtained:
 - a) 18
 - b) 16
 - c) 13
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6. Assuming that the test and criterion scores are distributed according to the normal distribution, and that the correlation between test and criterion is 0.7. Calculate the enneatype obtained in the criterion by a participant that obtained in the test a typical score equal to the unit.
 - a) 6
 - b) 7
 - c) 8
 7. If a participant obtains an empirical score of 6 points in a test, the mean and variance of the test being 6 and 9 respectively. What would his score be in another equivalent test in which the mean and variance were 10 and 4? Use the most appropriate method.
 - a) 9
 - b) 10
 - c) 11
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Case 3. Please, answer questions 8-12 with the following information.

A perceptual speed test consisting of 20 items was completed by 100 students. Its mean was 6 and the variance was 9. Knowing that 70% of the variance of the empirical scores was due to the variance of the true scores, calculate:

8. The confidence interval in which we can say that there will be the true score (**IN RAW SCORES**) of a participant who obtained a typical score of 1.5 in the test. Use the regression model (**L.C.: 99%**).

- a) 5.56 – 12.74
- b) 7.56 – 14.74
- c) 9.56 – 16.74

9. The confidence interval in which we can say that the true score will be (**IN DIFFERENTIAL SCORES**) of a participant who obtained a typical score of 1.5 in the test. Use the regression model (**L. C.: 99%**)

- a) 7.56 – 14.74
- b) 9.56 – 16.74
- c) -0.44 – 6.74

10. The confidence interval in which we can say that there will be the true score (**IN STANDARDIZED SCORES**) of a participant who obtained a typical score of 1.5 in the test. Use the regression model (**L. C.: 95%**).

- a) 0.36 – 2.16
- b) -0.44 – 6.74
- c) 9.56 – 16.74

11. Considering the original data of case study 3, approximately, how many final items would the test have to have to achieve a reliability of 0.9?

- a) 37
- b) 57
- c) 77

12. Considering the original data of case study 3, if the same test is applied to another similar sample, but whose standard deviation is 2, the new reliability coefficient obtained in the second sample would be:

- a) 0.72; appropriate
- b) 0.32; inappropriate
- c) 0.65; ambiguous

Case 4. Please, answer questions 13-15 with the following information. It is known that there is a direct relationship between attending psychometric classes and academic performance. We want to know if a knowledge test in psychometrics has the capacity to predict the final grade of a group of students. The test has been applied to a sample of students, obtaining a mean and a standard deviation of 8 and 1 respectively. At the end of the course, these same students have been evaluated in academic performance, obtaining an average of 4 and a variance of 4 points respectively. Knowing that 64% of the variance of the scores of the participants in the criterion can be predicted from the test:

13. The coefficient of the predictive value of the knowledge test is:

- a) 0.4
- b) 0.5
- c) 0.6

14. The predicted **TYPICAL SCORE** in academic performance of a student who obtained a raw score of 9 in the knowledge test would be:

- a) -3.2
- b) -0.2
- c) 0.8

15. The lower and upper values of the confidence interval around the predicted raw score obtained from a raw score of 8 in the test, with a 99% confidence level would be:

- a) 0.90 – 7.10
- b) 0.69 – 5.49
- c) 3.46 – 3.86

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ANSWER SHEET TYPE A**

Item	Option	Item	Option	Item	Option
1	C	6	A	11	C
2	B	7	B	12	B
3	A	8	A	13	A
4	B	9	C	14	C
5	B	10	A	15	A