Homework Assignment 3

HWA3.1. A psychologist is developing an inventory to measure Personality-Environment Fit (P-E Fit) in the workplace. P-E Fit is described as the congruence or incongruence of an individual's personality with the demands and characterization of their environment. Below are three areas and their importance that the researcher identifies about P-E Fit.

Comprehensive test gauging P-E Fit

A. Topics	B. Subject	C. Reasoning
1. Characteristics (of)	1. Individual's personality	1. Identifying what is considered satisfactory and what is not
2. Needs (of)	2. Environment	2. Identifying priorities and goals

Importance of each area

		C1	C2
A1	B1	10%	15%
	B2	15%	5%
A2	B1	15%	15%
	B2	15%	10%

HWA3.1.1 A valid test should contain appropriate number of items. Suppose the researcher decides to create a 50-item inventory. The cell A1B1C1 should have ___ items, and cell A2B1C2 ___ items.

1) 5
2) 8
3) 10
4) 15

HWA3.1.2. The researcher finally creates 50 items for the different domains as shown below. Note: [*x*] indicates there are *x* items in the domain. Which two statements are correct? (Give the answer in increasing order. If options 1 and 4 are correct, write the answer as 14, not 41.)

		C1	C2
A1	B1	#2, 12, 26, 30, 43	#15, 17, 20, 22, 25, 31, 39, 45
	B2	#7, 9, 13, 18, 23, 36, 42, 47 [8]	#1, 5, 48 [3]
A2	B1	#6, 14, 34, 38, 41, 44, 50	#3, 8, 11, 21, 32, 46, 49
	B2	#4, 16, 24, 28, 33, 35, 40	#10, 19, 27, 29, 37

1) The structure of the test approximates the proportional structure of the importance domain and includes items 1-50
2) The structure of the test does not form a proportionate, representative sample
3) The structure of the test shows strong evidence of content validity
4) The structure of the test shows weak evidence of content validity

Write your answer as a four-digit number.

HWA3.2. Suppose that a researcher wants to develop a new test on the construct *depression*. Denote this new developed depression test as Test X. Test A is an existing and valid measure for the same purpose, and Test B is an existing and valid measure for the construct of *resiliency* (also measured be two other behaviors – see table below). The following table shows the actual correlations between measures of depression and other related and unrelated behaviors and Tests A and B.

Construct	Behaviors	Expected correlation to Test X	Actual Correlation	
			Test A	Test B
Depression	Lack of activity in once-pleasurable pursuits	Strong and positive	.58	
	Increase difficulty in eating	Strong and positive	.82	.06
	Increase difficulty in sleeping	Strong and positive		-.40
Anxiety (+)	Lack of social interaction	Strong and positive	.63	-.18
	Use of destructive coping tools (e.g., binge drinking)	Moderate and positive		-.70
Resiliency ( )	Use of constructive coping tools (e.g., seeking advice)	Weak and negative	-.50	.63
	Communicates well with others	Weak and negative	-.21	.78
Intelligence (uncorrelated)	Number of problems solved in a IQ test	None		.14

For **HWA3.2.1- HWA3.2.4**, choose from the options below.

1) -.37 **2)** .04 **3)** .26 **4)** .49 **5)** .70

HWA3.2.1. The most likely correlation between "Lack of activity in once-pleasurable pursuits" and Test B is __.

HWA3.2.2. The most likely correlation between "Increase difficulty in sleeping" and Test A is __.

HWA3.2.3. The most likely correlation between "Use of destructive coping tools" and Test A is __.

HWA3.2.4. The most likely correlation between "Number of problems solved in a IQ test" and Test A is __.

Write your answer as a four-digit number.

HWA3.3. Use the information from **HWA3.2** to answer the following questions.

HWA3.3.1. What type of validity evidence does the correlation between the scores of Test X and those of Tests A and B provide?

1) Test content
2) Response process
3) Internal structure
4) Relations to external variables

HWA3.3.2. What type of validity evidence is the correlation between the scores of Test X and those of Tests A?

1) concurrent validity
2) convergent validity
3) discriminant validity
4) predictive validity

HWA3.3.3. This researcher wants to assess the multitrait-multimethod validity. In the multitrait-multimethod matrix, there are different validity coefficients. Which one would probably have the **SECOND** largest correlation coefficient?

1) Coefficient for same trait, same method
2) Coefficient for same trait, different methods
3) Coefficient for different traits, same method
4) Coefficient for different traits, different methods

HWA3.3.4. Assume that the correlation between Test X score and Test A score is .60, and the reliabilities for Test X and Test A are .77 and .85, respectively. The attenuated correlation between the newly developed test and Test A is ._4.

1) 6
2) 7
3) 8
4) 9

HWA3.3.5. Assume that the reliabilities of Test X and Test A are .90 and .80, respectively. The attenuated correlation between Tests X and A was found to be .71. Which is a probable uncorrected correlation between Tests X and A score? (No computation necessary.)

1) .6
2) .7
3) .8
4) .9

Write your answer as a five-digit number.

HWA3.4. You are working in the registry office of a university. Every year, the university admits applicants using the admission test scores. You are required to report the validity of the admission test for your university. One way is to report the correlation (r) between the admission scores and the exit scores students get when they graduate. Assume $r = .30$. Also, you learn from the new reports that the standard deviation (SD) of the admission scores for all applicants of the year is 100. The table below shows the means and variances of the admission scores for four universities. Note that the total score of the admission test score is 750.

University	Admission Rate (%)	Mean	SD	Corrected *r*
A	35%	481		
B	15%	551	44	.30
C	8%	561	40	.30
D	1%	641		

HWA3.4.1. What type of validity evidence is the raw correlation between the admission test scores and the exit scores?

1) concurrent validity
2) convergent validity
3) discriminant validity
4) predictive validity

HWA3.4.2. Which statement is true about the type of validity in **HWA3.3.1**?

1) It is often overestimated because of restriction of range of test score.
2) It is often underestimated because of restriction of range of test score.
3) It is often overestimated because of attenuated correlation.
4) It is often underestimated because of attenuated correlation.

HWA3.4.3. The standard deviation (SD) of the admission test scores for all applicants is __.

1) 7
2) 8
3) 9
4) 10

HWA3.4.4. If you are working in University A, the variance of the admission test scores for the successful applicants is very likely to be __ than University C. For example, it could be __.

1) Smaller
2) Larger
3) 16
4) 81

Write your answer as a five-digit number.

HWA3.5. Continuing Problem HWA3.4:

HWA3.5.1. The corrected correlation between the admission test scores and exit scores for University A is ._7.

1) 1
2) 2
3) 3
4) 4

HWA3.5.2. If you are working in University D, the variance of the admission test scores for the successful applicants is very likely to be __ than University B. For example, it could be __.

1) Smaller
2) Larger
3) 16
4) 81

HWA3.5.3. Which of the correlations below is the most likely uncorrected correlation between the admission test scores and exit scores for University D?

1) .15
2) .25
3) .35
4) .45

HWA3.5.4. Which statement is true**?**

1) The uncorrected correlation should be similar across the universities.
2) The larger the original variance of admission test scores is, the more different the uncorrected and corrected correlations will be.
3) The mean admission test score has an impact on the uncorrected correlation.
4) The validity coefficient of the admission test scores is deemed not acceptable.

Write your answer as a five-digit number.