

Directions and Sample Questions for Final Exam

Part I: Fundamentals of Scientific Reasoning

A. Answer the following multiple-choice questions (10 points)

In the statement “Dogs chase only if cats run”

- a. Cats run is a sufficient condition
- b. Cats run is a necessary condition
- c. Dogs chase is a necessary condition
- d. None of the above

A valid argument with a true conclusion

- a. must have all true premises
- b. must have at least one true premise
- c. must be sound
- d. may be sound or unsound

When a prediction based on a hypothesis turns out true

- a. A scientist has confirmed the hypothesis
- b. The hypothesis could still be false
- c. There could be problems with the auxiliary hypotheses
- d. A scientist should look for other true predictions

Part II: Correlation

A. Answer the following multiple-choice questions (15 points)

To make a prediction for a new value of the predictor variable based on a correlation, you

- a. multiply the Pearson correlation coefficient by the new value and add the value of the y-intercept.
- b. multiply the regression coefficient by the new value and add the value of the y-intercept.
- c. divide the new value by the slope of the correlation line and add the value of the y-intercept.
- d. add the new value to the slope of the correlation line and divide by the value of the y-intercept.

For SAT scores to be a legitimate factor in determining college admissions,

- a) there must be a correlation between SAT scores and success in college
- b) SAT scores must be a direct (proximal) cause of success in college
- c) SAT scores must be a cause (direct or indirect) of success in college
- d) colleges must align their curriculum with the questions used on the SAT

Which of the following choices best explains the concept of an “operational definition”?

- a. It supplies sufficient conditions for a variable
- b. It provides necessary conditions for a variable
- c. It provides necessary and sufficient conditions for a variable
- d. It relates variables used in an hypothesis to measurable variables

You have found a correlation of .42 between two variables in a sample of people. Why do you need to determine whether the correlation is statistically significant?

- a) there could be a correlation in the sample but none in the actual population
- b) there could be a correlation in the actual population but none in the sample
- c) although there is a correlation, it might not be very important
- d) there may be very different reasons for the correlation in the actual population than in the sample

B. Answer the following questions in a paragraph (15 points)

Explain why establishing correlation does not suffice to demonstrate causation. What are some ways in which variables A and B may be correlated without A causing B?

Part III: Causation

A. Answer the following multiple-choice questions (20 points)

Mill’s methods allow us to:

- a. Identify actual effects from among possible effects
- b. Identify actual causes from among possible causes
- c. Avoid performing costly experiments
- d. Determine what variables are correlated with others

A _____ cause is a cause near the beginning of a chain of causation

- a. Proximate
- b. Ultimate
- c. Partial
- d. Necessary

Which of the following is/are NOT true of a necessary cause:

- a. If they fail to occur the effect also does not occur
- b. If they occur then the effect also occurs
- c. Every effect has only one necessary condition
- d. If they fail to occur the effect might still occur

Confounding variables are a threat to the

- a. the logical validity of a study
- b. external validity of a study
- c. internal validity of a study
- d. statistical significance of the result

When a researcher identifies possible subject confounds while doing a prospective study, a good strategy is to

- a. randomize the assignment of subjects so as to break any correlation between them and the independent variable
- b. screen off the confounds so that they do not influence the dependent variable
- c. match subjects in the different groups in terms of these variables
- d. lock the confounding variables so that they cannot affect the outcome

B. Answer the following questions in a paragraph (15 points)

Many psychological studies performed in the U.S. use samples composed entirely of undergraduates in psychology classes. Discuss the implications of this in terms of the external validity of the experiments conducted. Under what circumstances will the experiments remain externally valid and when will external validity be compromised?

Part IV: Mechanism

A. Answer the following multiple-choice questions (10 points)

Which of the following is not a central feature of a mechanism?

- a. a phenomenon
- b. component parts performing operations
- c. a designer
- d. organization

The debate between holism and reductionism consist in all of the following except:

- a. holists claim that reductionists fail to consider the importance of higher-levels of organization.
- b. reductionists claim that holists fail to investigate the contributions parts make to the behavior of the whole.
- c. reductionists claim that we should reduce the number of components in a mechanism.
- d. holists claim that the whole is more than the sum of its parts.

B. Answer the following question in a paragraph (15 points)

Explain and give an example of how a lesion or ablation experiment provides evidence as to the workings of a mechanism. Discuss both what such an experiment can show and its limitations.