Phil 12
Fall 2019

Directions and Sample Questions for Final Exam

Part I. Logic

A. Indicate the *best* answer to each of the following multiple-choice questions (10 points)

1. *Therefore*
      a. indicates the consequent of a conditional
      b. indicates the conclusion of an argument
      c. indicates that the argument is valid
      d. can be used to identify the premise of an argument

2. If a valid argument has a false premise
      a. it can still be sound
      b. it can't have a true conclusion
      c. it can have a true conclusion
      d. it cannot have the form modus ponens

3. If an argument has true premises and a true conclusion
      a. it is valid
      b. it is sound
      c. it might be unsound
      d. it must have the form modus ponens or modus tollens

4. "Only if there is food left are the cooks allowed to eat" is equivalent to
      a. If there is food left, the cooks are allowed to eat.
      b. If there is no food left, the cooks are not allowed to eat.
      c. Unless the cooks are allowed to eat, there is food left.
      d. If the cooks are not allowed to eat, there is no food left.

5. Which of the following statements is not equivalent to the others?
      a. Unless the wind subsides, we will have to cancel the barbeque.
      b. If the wind does not subside, we will have to cancel the barbeque.
      c. If we don't have to cancel the barbeque, then the wind subsides.
      d. Only if the wind doesn't subside will we have to cancel the barbeque.

B. Answer the following question in a short paragraph (5 points):

From the hypothesis that salt reduces the freezing temperature of water, researchers predict that a particular beaker of saltwater will not freeze at 32° F (0° C). When they check the beaker at 32° F, they find that it has frozen. What is the logical form of the argument that they would use to show that the hypothesis was false? Assuming that they think that the hypothesis is nonetheless true, what would be a good way to challenge the argument?

Part II. Observation: Indicate the *best* answer to each of the following multiple-choice questions (10 points)

The following questions are based on this scenario. To determine how often students at a given university use profanity, a researcher hired a number of students to hang out socially with three or more friends who are also students for at least a half hour, participating in any discussions they have. These student observers were instructed not to initiate the use of profanity, but if others were using it a lot, they should join in. During a half-hour interval they used a data recorder in their pocket to record every instance in which someone other than they used one of set of designated profane words.

1. This is an example of
      a. a naturalistic observation study.
      b. a participant observation study.
      c. an experiment.
      d. a structured observation study.

2. The variable "number of profane words uttered" is
      a. a nominal variable.
      b. an ordinal variable.
      c. an interval variable.
      d. a ratio variable.

3. The reason to use a data recorder in one's pocket rather than holding it openly in one's hand is to
      a. avoid observer bias.
      b. avoid reactivity bias.
      c. avoid regression to the mean.
      d. keep the recorder warm.

4. By specifying the words that are to count as profane, the researcher is
      a. introducing observer bias.
      b. offering necessary and sufficient conditions for profanity.
      c. employing an operational definition of profanity.
      d. engaged in time sampling.

5. If the data is distributed normally, the mean is 14, and the standard deviation is 6, then
      a. the median will be greater than the mean.
      b. the median will be a better indication of the central tendency.
      c. in approximately 66% of the samples the number of profane words was between 2 and 26.
      d. in approximately 95% of the samples the number of profane words was between 2 and 26.

Part III. Correlations: Indicate the *best* answer to each of the following multiple-choice questions (10 points)

1. If, in a population the Pearson correlation between calories consumed and minutes spent texting is 0.04,
  a. the correlation is almost certainly not due to chance.
  b. calorie consumption is a good predictor of minutes spent texting.
  c. the correlation is very weak.
  d. the correlation has a high likelihood of being due to chance.

2. The regression line between crop yield (C) and rainfall (R) is C = -.62 R + 12. Which of the following is true
  a. The Pearson coefficient = -.62.
  b. The Pearson coefficient is negative.
  c. Rainfall explains most of the variance in crop yield.
  d. None of the above

3. Statistical significance can be employed to measure:
  a. the likelihood that a correlation you observed in a sample was due to chance.
  b. the likelihood of making a Type I error if one rejects the null hypothesis.
  c. the likelihood that a difference you observed in the mean values on a variable between two sample groups was due to chance.
  d. all of the above

4. If it is extremely important not to commit a Type II error in your study, you should
  a. require a high *r* value.
  b. require that p be <.01 rather than <.05.
  c. use a sufficiently large sample to detect whatever difference exists.
  d. conduct an experiment rather than a correlational study.

5. How could there be a large difference between the means of two sample populations and it still be wrong to conclude that there is a difference in the means of the two actual populations?
  a. There were errors in the measurement of the difference in the actual population.
  b. The difference between the sample populations was of the size that could not have arisen by chance.
  c. The difference between the sample populations was not statistically significant.
  d. The nominal variable in terms of which the sample population was divided was not operationally defined.

Part IV: Causation

A. Indicate the *best* answer to each of the following multiple-choice questions (30 points)

1. A(n) _____ cause is a cause far back in a chain of causation
      a. proximate
      b. ultimate
      c. partial
      d. necessary

2. Which of the following is true of a necessary cause:
      a. If it fails to occur the effect will not occur.
      b. If it occurs then the effect will also occur.
      c. Every effect has only one necessary cause.
      d. If it fails to occur the effect might still occur.

3. In an experiment, a researcher
      a. manipulates the independent variable
      b. measures the independent variable
      c. manipulates the dependent variable
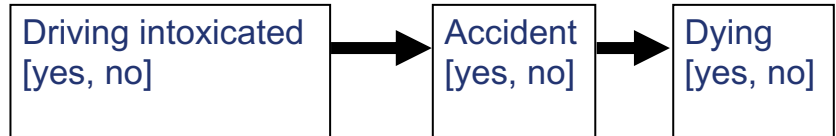   d. none of the above

4. 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.

5. In order to determine what caused some of her puppies to die and others to live, Ali decided to employ one of Mill's methods. She constructed the table to the right and from the results concluded it was leaving the puppies with her brother. Which of Mill's methods was Ali employing?
      a. agreement
      b. difference
      c. residues
      d. concomitant variation

Had enough food	Had the proper shots	Stayed with her brother	Puppy died
Yes	No	Yes	Yes
No	Yes	Yes	Yes
Yes	No	No	No
Yes	No	No	No

6. In the causal diagram to the right,

| Driving intoxicated [yes, no] | → | Accident [yes, no] | → | Dying [yes, no] |

    a. driving intoxicated is a common cause of the accident and dying.
    b. the accident is a causal intermediate between driving intoxicated and dying.
    c. the accident is a common cause of driving intoxicated and dying.
    d. driving intoxicated is the proximate cause of dying.

7. What is the causal fallacy exhibited in the following quotation: "Within weeks of Obama securing the Democratic nomination for President, major banks started to fail. Thus, Obama's nomination must have caused them to fail"?
    a. irrelevant causal factors
    b. ignoring a common cause
    c. post hoc, ergo propter hoc
    d. confusing cause and effect

8. If a researcher argued: "If gambling were not a cause of bankruptcy, then one would not expect a statistically significant difference in bankruptcy in states that allow gambling. The fact that there is such a difference shows gambling is a cause of bankruptcy."
    a. She would be using denying the antecedent, which is invalid.
    b. She would be confusing correlation and causation.
    c. She would be using modus ponens, which is valid.
    d. She would be using modus tollens, which is valid.

9. Why is it important to establish that the difference in the dependent variable observed in a sample is statistically significant?
    a. Otherwise one cannot be sure one has really manipulated the independent variable.
    b. The difference in the dependent variable in the experiment could have been due to chance.
    c. There could be a subject confound in the experiment that has not been controlled for.
    d. The study would otherwise be lacking in external validity

10. If there are differences in the way the subjects in the experimental and control group are treated, other than the manipulation of the independent variable being investigated, these are considered
    a. subject variable confounds.
    b. procedural variable confounds.
    c. dependent variable confounds.
    d. independent variable confounds.

11. 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.

12. Which of the following is a concern of external validity?
    a. The experimental and target groups are not relevantly similar.
    b. Effects on the dependent variable are not due to the manipulation of the
    independent variable.
    c. Effects on the independent variable are due to the manipulation of the dependent
    variable.
    d. There was a confounding subject variable that was not adequately controlled.

13. Assume that in a laboratory study saccharin has been demonstrated to cause cancer in rats.
Whether or not it causes cancer in humans is a question of:
    a. what the p-value of the correlation is.
    b. internal validity.
    c. external validity.
    d. the strength of the correlation.

14. A within-subjects experimental design
    a. eliminates any concern with procedural confounds.
    b. increases the risk of "carry-over" effects between conditions.
    c. increases the risk of "experimenter bias."
    d. requires many more subjects than a between-subjects design.

15. When a researcher identifies possible subject confounds while doing a prospective study of
differences due to shoe size, 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 independent variable.
    c. match subjects in the different groups in terms of possible confounding variables.
    d. lock the confounding variables so that they cannot affect the outcome.

B. Answer the following questions in a paragraph (20 points)

1. Explain what is wrong with the following inference as a way to confirm a causal claim and
present an alternative inference strategy that should be used to confirm the causal claim.
Explain in clear prose how your alternative differs from the one below:
If watering my plants causes them to grow, then there will be a statistically significant
difference in the resulting growth when I water some and don't water others. I watered some
of my plants and not others and there was a statistically significant difference in their growth.
So I conclude that watering my plants causes them to grow.

2. 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 V: Mechanism

A. Indicate the *best* answer to each of the following multiple-choice questions (10 points)

1. To understand why giving a monkey treats whenever it presses a lever causes a monkey to press the lever more often, researchers should
      a. conduct experiments in which a group of monkeys is divided into two groups, one is provided with the reward and the other is not, and researchers check whether there is a statistically significant difference in subsequent lever pressing.
      b. conduct a naturalistic study to determine whether monkeys in natural circumstances tend to press levers when they are given food afterwards.
      c. search for an area inside the monkey's brain that is active whenever it is given a reward and conclude that it is the cause of the monkey's lever pressing.
      d. search for operations in the monkey's brain which are involved as the monkey increases its response after receiving treats and determine how they are organized to produce the phenomenon.

2. Which of the following is not a necessary feature of a mechanism?
      a. a phenomenon
      b. component parts performing operations
      c. a designer
      d. organization

3. Inhibition, as a method of investigating mechanisms, involves
      a. manipulating a negative cause.
      b. preventing the normal operation of some part of the mechanism.
      c. preventing the whole mechanism from receiving any input.
      d. preventing the whole mechanism from producing any output.

4. In inserting electrodes into a rat's hippocampus and recording as it navigates through a maze, a researcher is
      a. conducting a lesion study that shows that the hippocampus is necessary for spatial memory.
      b. conducting a stimulation study that shows that the hippocampus is sufficient for spatial memory.
      c. conducting a recording study that shows that activity in the hippocampus is sufficient for performing spatial memory tasks.
      d. conducting a recording study that shows that the hippocampus is active when the rat is performing spatial memory tasks.

5. A criticism reductionists make of holists is that
      a. they fail to consider how the mechanism as a whole is organized.
      b. they focus only on the parts not on what they do.
      c. they ignore the phenomenon that they are supposed to be trying to explain.
      d. they think that the parts and operations don't matter, only how they are organized.

B. Answer the following question in a paragraph (5 points)

1. Describe the different experimental procedures used to experiment on Gizmo (on Inquiry) and what each revealed about how that mechanism worked.