

# Practice Exam

## GRADING KEY

This examination has the following six parts:

Part A: Multiple-choice questions (*30 marks*)

Part B: Nonexperimental briefs (*10 marks*)

Part C: Computing a correlation coefficient (*10 marks*)

Part D: Key concepts in Research Methods (*15 marks*)

Part E: Experimental briefs (*10 marks*)

Part F: Design an experimental study (*25 marks*)



## Part A: Multiple-choice questions (30 marks)

This part includes 30 questions, each of which is worth 1 mark.

1. An example of an operational definition for anxiety is a:
  - a. score on an anxiety questionnaire
  - b. person's description of anxiety
  - c. how tense or nervous a person is presently feeling
  - d. punctuality
  
2. The most accurate research method of determining whether caffeine supplements improve memory performance is
  - a. case study
  - b. correlational study
  - c. experimental study
  - d. naturalistic observation
  
3. An elasticized measuring tape is used to measure a child's waist. In the first measurement, the tape is stretched tightly. In the second measurement, the tape is held loosely. This is a good example of:
  - a. poor test-retest reliability
  - b. good test-retest reliability
  - c. good alternate forms reliability
  - d. poor alternate forms reliability
  
4. Researchers find a correlation of +1.20 between coffee consumption and mental alertness. This indicates that:
  - a. drinking more coffee is associated with mental alertness
  - b. drinking less coffee is associated with mental alertness
  - c. there is a flaw in the computation of the correlation coefficient
  - d. drinking coffee increases mental alertness

5. Evidence reveals a correlation between the number of hours toddlers spend watching television and their level of hyperactivity in later childhood. What does this definitively indicate?
  - a. that television watching causes hyperactivity
  - b. that hyperactive children watch television
  - c. that parents of hyperactive children rely on television as a means of managing hyperactivity
  - d. that there is a relationship between television viewing and hyperactivity
  
6. An advantage of the case study method is
  - a. it allows for definitive conclusions
  - b. it is hypothesis generating
  - c. it is hypothesis confirming
  - d. it allows for broad conclusions
  
7. The standard deviation tells us?
  - a. how much, on average, individual scores differ from the mean
  - b. how much, on average, individual scores differ from one another
  - c. the midpoint of individual scores in a distribution
  - d. the distance between the highest and lowest individual scores in a distribution
  
8. The results of a study are found to be statistically significant. This means that
  - a. the researchers have proven their hypotheses
  - b. the results are greater than what would be expected by chance
  - c. the study was conducted flawlessly
  - d. there was a large difference between the experimental and control groups on the dependent variable

9. Researchers manipulate or control variables in order to conduct
- naturalistic observation.
  - the double-blind procedure.
  - case studies.
  - a true experiment.
10. Which of the following is the strongest correlation coefficient?
- 0.50
  - 0.92
  - 0.75
  - 0.75
11. Researchers studied language development in the same group of children every year over a five-year period. This research design is called:
- cross-sectional
  - longitudinal
  - placebo-controlled
  - correlational
12. Calculate the median of the following distribution of scores: 5, 2, 3, 8, 1, 4, 5
- 4
  - 5
  - 4.5
  - 8
13. Calculate the mode of the following distribution of scores: 5, 2, 3, 8, 1, 4, 5
- 4
  - 5
  - 4.5
  - 8

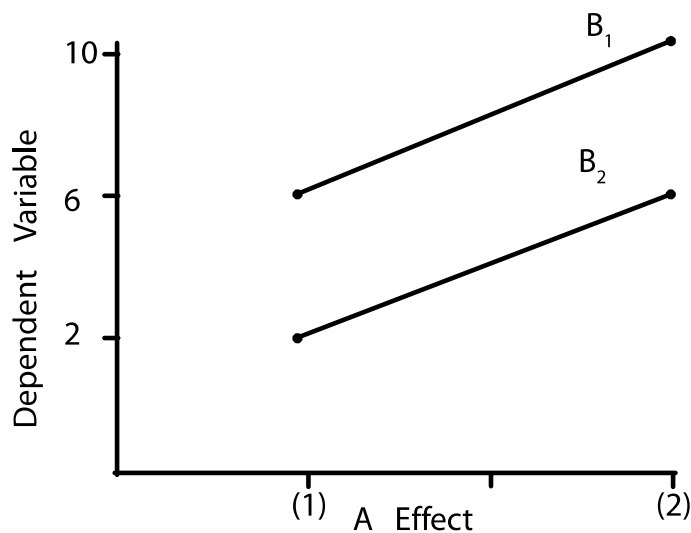
14. In science, a theory is a(n)
  - a. strongly held opinion
  - b. specific prediction about causal factors
  - c. testable explanation for a set of observations
  - d. scientific law
  
15. Jasmeet is interested in conducting an experiment in which she manipulates the amount of food she gives her Siamese fighting fish. She ensures that the size of the fish tank is identical for each fish, and that fish are assigned into groups randomly. What aspect of this experiment has Jasmeet not worked out?
  - a. Independent variables
  - b. Confounding variables
  - c. Dependent variables
  - d. Sampling bias
  
16. To avoid experimenter bias and subject bias researchers employ
  - a. the single-blind procedure
  - b. the double-blind procedure
  - c. random sampling
  - d. the naturalistic observation method
  
17. A concern when using self-report measures is:
  - a. the hindsight bias
  - b. reaction time validity
  - c. the social desirability bias
  - d. a small sample size

18. Researchers are testing baby James' ability to recognize his mother's face. James is presented with an image of his mother's face and a stranger's face. The researchers examine how long James looks at each image. What type of measure are the researchers using?
- self-report
  - report by others
  - behavioral
  - physiological
19. What would be the best method for studying the situations in which people pick their nose?
- case study
  - naturalistic observation
  - correlational method
  - experimental method
20. What would be the best method for examining the relationship between age and driving behavior?
- case study
  - naturalistic observation
  - correlational method
  - experimental method
21. Uncontrolled factors that can reduce internal validity are termed \_\_\_\_\_.
- Dependent variables
  - Bias variables
  - Subject variables
  - Confounding variables

22. Science deals in \_\_\_\_\_ not \_\_\_\_\_; therefore, science cannot deal in absolute \_\_\_\_\_.
- induction; deduction; truth
  - deduction; induction; falsification
  - induction; deduction; falsification
  - deduction; induction; truth
23. Testing the reliability of a psychometric instrument by dividing the test items into two arbitrary groups and correlating the scores obtained in the two parts of the test is termed:
- Split-half reliability
  - Parallel forms reliability
  - Test-retest reliability
  - Half-form reliability
24. Factorial designs are designs with more than one:
- independent variable
  - dependent variable
  - significant interaction
  - significant main effect
25. In a 2 x 3 factorial design there are \_\_\_\_\_ treatment conditions.
- 2
  - 5
  - 6
  - There is insufficient information to answer this question
26. When different participants are randomly assigned to each of the conditions it is termed:
- An independent groups design
  - A repeated measures design
  - A mixed design
  - A matched groups design

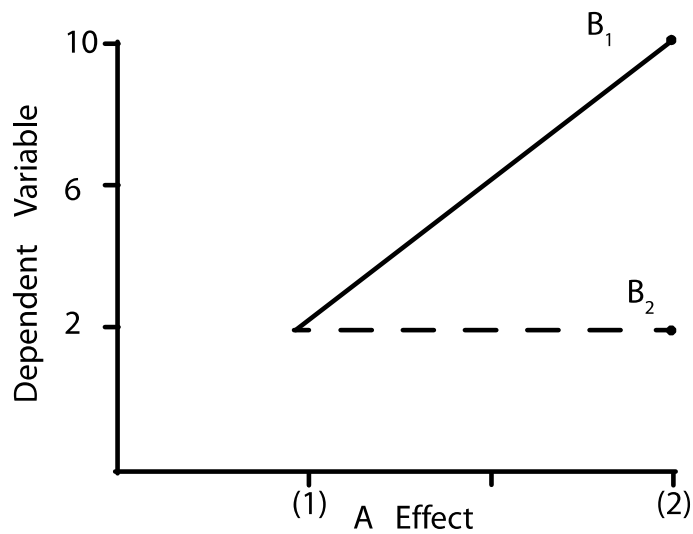


27. In quasi-experimental research:
- Researchers have no direct control over the independent variables
  - There are subject variables
  - Causal statements are not possible
  - All of the above
28. You read in the newspaper that Vancouver has been ranked as the second best city in the world in which to live. What kind of scale is being used here?
- Ratio
  - Nominal
  - Interval
  - Ordinal
29. The following outcome of a factorial design indicates:



- A main effect of A, a main effect of B, and an interaction
- A main effect of A, a main effect of B, and no interaction
- A main effect of A, no main effect of B, and no interaction
- No main effect of A, a main effect of B, and no interaction

30. The following outcome of a factorial design indicates:



- a. A main effect of A, a main effect of B, and an interaction
- b. A main effect of A, a main effect of B, and no interaction
- c. A main effect of A, no main effect of B, and no interaction
- d. No main effect of A, a main effect of B, and no interaction

## Part B: Nonexperimental briefs (10 marks)

Read the following descriptions of two nonexperimental studies. For both studies, answer the questions listed below. Each answer is worth 2.5 marks, for a total of 10 marks.

- A. Ilan suspects that there is a relationship between the amount of choice people have when making a decision and their satisfaction with their eventual choice. He decides to study this question outside two ice-cream shops located in different parts of the city. Store A offers a choice of six flavours of ice cream whereas Store B offers a choice of thirty flavours of ice cream. For the same two-week period, Ilan positions his research assistants outside both stores between 3pm and 6pm. The research assistants approach customers who have just purchased some ice cream as they are leaving the store, introduce themselves and invite them to complete a brief questionnaire. One of the questions on the questionnaire asks the customers to rate their level of satisfaction with the ice cream. Statistical analyses show that the customers that bought their ice cream from Store A were more satisfied than those that bought their ice-cream from Store B.
- B. Sam is a graduate student who is interested in whether being extraverted causes people to have more friends on Facebook. He recruits a large number of students at his university to participate in his study. Before the study begins, the students give the research team permission to temporarily access their Facebook profile page. Sam gets four of his research assistants (none of whom know any of the participants personally) to browse through each of the Facebook profile pages and to record how many Facebook friends each student has. Sam also requests the students to complete a detailed questionnaire that accurately measures how extraverted they are. When Sam looks at both sets of scores he concludes that the being extraverted does cause people to have more Facebook friends.

1. Describe the type of nonexperimental research used in this study. How do you know this? (2.5 marks)

2. Describe one threat to internal validity faced by this study design. In your opinion what is the best way to overcome or account for this threat? (2.5 marks)

## Part C: Computing a correlation coefficient (10 marks)

Professor Aknin is interested in the relationship between charitable giving (i.e., how much money people donate to charity) and happiness. She administers a questionnaire for life satisfaction among a sample of 5 people and also asks them to estimate how much money they donated to charity over the past year. The data collected are as follows:

Life satisfaction	Approximate amount donated to charity
24	\$600
29	\$400
14	\$20
20	\$80

1. Compute the correlation for these data and show your work. In determining your answer, show your computation and follow the correct procedure. For full marks, values must exactly equal the correct values. (10 marks)

Formula for computing a correlation:

$$r = \frac{n \sum xy - (\sum x)(\sum y)}{\sqrt{[n \sum x^2 - (\sum x)^2][n \sum y^2 - (\sum y)^2]}}$$

## Part D: Key concepts in Research Methods (15 marks)

This section evaluates your understanding of four key concepts in the course and comprises 15 percent of your grade on the final examination. Each of the four tasks in this section is worth 5 marks. Do not answer all of the questions. Choose and answer only **three** of the four questions.

1. Discuss five threats to internal validity in studies that involve repeated testing (e.g., pretest-posttest, repeated measures, etc.). (5 marks)
2. List two advantages and two limitations (each) of case studies and quasi-experimental research. (5 marks)
3. Describe four ways that you could improve the reliability of a study. (5 marks)
4. Give an example of how a laboratory experiment can be valid but have low generalizability. Name at least four types of validity in your example. (5 marks)

## Part E: Experimental briefs (10 marks)

Part E contains two experimental briefs and is worth 10% of your final exam grade. Answer the sets of questions associated with each brief.

### Brief 1 (2 marks)

Dr. Nervous was interested in the effects of caffeine on sleep. She randomly assigned 20 university students (10 men and 10 women), all of whom were healthy and of average weight, to four groups. The control group drank decaffeinated coffee, and the other three groups drank one, two, or three cups of coffee. She found that people took longer to fall asleep after they drank more coffee. Based on this study, provide one example of each of the following variables:

- a. Dependent variable
  
- b. Independent variable
  
- c. Control variable
  
- d. Extraneous or confounding variable

### Brief 2 (8 marks)

You have developed an online test of “true” love. However, you are concerned about the validity of your test; you are not sure it actually measures true love. Briefly describe four different types of convergent validation studies that you could do to make sure that your study measures true love.

## Part F: Design an experimental study (25 marks)

This part of the exam requires you to design a research experiment and is worth 25% of your final exam grade.

Hypokinetic disease is caused by insufficient activity and lack of regular exercise. Coronary heart disease, diabetes, high blood pressure, lower back problems, joint disorders, and obesity are just some facets of hypokinetic disease.

Research has shown that if a person does not start a consistent pattern of physical exercise as an adolescent or young adult, they are unlikely to develop the habit later. Imagine that you have been asked to design an experiment to increase physical activity in adolescents. You have reasonable access to funds and resources, but your study must be practical and feasible. Therefore, you will not be able to test all people and try all ways of increasing exercise. However, you should be able to identify some aspects of physical activity and think of some ways that might increase it for the long run. The following questions raise some of the important issues that you should consider when designing a longitudinal study.

Answer all of the following eight requests based on your design of an experiment. In each case, clearly state your reasons for your answers. In other words, justify your answers.

1. State the hypothesis of your experiment. (2 marks)

2. Who will your subjects be, and how will you select them? (3 marks)





5. Describe your dependent variable(s). (3 marks)
6. What type of experiment (e.g., before-after, between-subjects, within-subjects, repeated measures) will you use? Briefly explain why you chose this type. (4 marks)

7. Give an example of a possible confound and how you will control it.  
(4 marks)
8. In what ways is your experiment a limited test of this hypothesis? (Hint: One way of answering this is to describe further experiments that would establish the generality of your findings). (3 marks)