Your answers go on Canvas Test_5_2023.

One answer and only one answer per question. Leaving a question blank or filling in 2+ answers will be incorrect no matter what. (Canvas should not allow you to choose more than 1.)

A = True, B = False unless indicated otherwise. If any part of an answer is incorrect, treat all of it as incorrect. If different parts of an option are inconsistent with each other, consider it incorrect.

Controls

1-3. (3 pts) You feel lousy some days and good other days. You think your diet may underlie the differences, but you are not sure. You thus decide to manipulate your diet and monitor how you feel. The columns indicate different dietary ingredients that you plan to manipulate (e.g., wheat, nuts, …). On each day, you choose one diet composition specified by a row (A, B, …, H). You will eat rice for calories but otherwise limit your diet to contain only those ingredients given by a "+" in the row. How you feel will be scored in the right-most column during the study; you do not yet know how you will feel or how any ingredient will affect you: inclusion of any ingredient might make you feel better or worse. Indeed, you are not even confident that your diet is contributing to your problem. Which statements in the following questions are true?

		dietary ingredient					How you feel afterwards
Composition		wheat	nuts	dairy	meat	caffeine	
	(A)	+	+	+	+	+	?
	(B)	-	-	-	-	-	?
	(C)	+	-	+	+	+	?
	(D)	+	-	-	+	-	?
	(E)	+	-	-	-	-	?
	(F)	+	+	-	-	-	?
	(G)	-	+	-	-	+	?
	(H)	+	-	+	-	+	?

A = TRUE, B = false

1. (A)(B) The diet in (C) is expected to make you feel better than is (D) because (C) has more ingredients.

2. (A)(B) A comparison of (G) and (H) controls for 3 of the 5 ingredients.

3. (A)(B) At least one pair of diets allows you to assess the effect of meat when all other ingredients are controlled.

4-7 (4 pts) A study is done to determine whether exposure to artificial tanning lights increases the incidence of skin cancer. The study is limited to 100 women of various ethnicities; 50 of the 100 women are randomly chosen to be given a large exposure to tanning light, the other 50 are given none. Which statements about controls in this design are correct? Consider something to be controlled if it is controlled on average. **(A) = True (B) = false**

4. (A)(B) The study design controls for gender.

5. (A)(B) The study design controls for radiation.

6 (A)(B) The study design controls for body weight among the women at the start of the study.

7. (A)(B) The study design controls for ethnicity.

8-11. (4 pts) For the table, which comparison(s) of cells will eliminate X as a variable? Choose all that are correct. States X1, X2 and X3 are different values of X. Not all possible comparisons are listed in the questions.
(A) = True (B) = false

		X		
		state X1	state X2	state X3
Y	state Y1	(A)	(B)	(C)
	state Y2	(D)	(E)	(F)

8. (A)(B) Comparing A and E will eliminate X as a variable
9. (A)(B) Comparing B and E will eliminate X as a variable
10. (A)(B) Comparing A and B will eliminate X as a variable
11. (A)(B) Comparing A and D will eliminate X as a variable

12-13 (3 pts) A study is done to determine whether radiation increases the incidence of breast cancer. The study design involves giving 50 randomly chosen women a dose of X-rays. The control group is 50 men, who receive no radiation. The study finds that those receiving radiation had a higher incidence of breast cancer than those who did not.

Why might radiation not be the cause of the difference in cancer in this study? **(A) = True**

12. (A)(B) The random assignment was not done correctly to eliminate possible third variable differences between control and treatment groups.

13. (A)(B) Independently of radiation, women may get breast cancer more often than men.

Experiments (controls and ideal design features are included)

14-21 (8 pts) Which of the following studies describe experiments, regardless of whether the experiment was designed well or poorly (some of these studies may be considered unethical, but the question is merely about which studies are experiments)? **(A) = True (B) = false**

14. (A)(B) You wish to fix your vacuum cleaner, which will no longer clean the floor. Suspecting that the problem is the belt, you replace it with a new one. You then try vacuuming with it.

15. (A)(B) A scientist gives a monkey an injection containing polio virus and observes whether the monkey acquires polio disease.

16. (A)(B) A study of 200,000 nurses records the diets, weight and height of each nurse, and then follows these nurses for five years, determining which die of heart disease. The study design does not involve asking the nurses to alter their diets. The study finds that overweight nurses die more frequently of heart disease.

17. (A)(B) A researcher records the diets of a large number of pregnant women without asking the participants to make any alterations in their diet. He finds that women who take twice the recommended daily dose of vitamin A have a 1 in 47 chance of a child with birth defects.

18. (A)(B) A researcher studies the effectiveness of the drugs AZT, ddI and ddC in treating AIDS. He does this by recruiting some volunteers, and then randomly assigning these volunteers to one of four treatments: AZT alone, ddI alone, AZT and ddI, AZT and ddC. The researcher finds that 10% of the patients taking AZT alone were dead in 3 years, but that only 5% of the patients in the other groups have died.

19. (A)(B) To test whether smoking causes lung cancer, you interview people about their smoking habits. You then identify two groups of individuals to observe for a period of two years: smokers and non-smokers. During your observation period, some of the smokers have quit because they do not like the habit. At the end, your study has three groups: smokers who did not quit, smokers who quit, and those who never smoked. You then look for an association between lung cancer and level of smoking.

20. (A)(B) You decide to rearrange your bed room. You begin by moving the lamp table to a new location to see if you like it better in the new place or the old place.

21. (A)(B) In 1918, astronomers awaited the solar eclipse to measure the distance of a star from the edge of the sun. This study was the first critical test of Einstein's general theory of relativity.

22-24 (1 pt each). Answer the following questions about whether the study described is experimental and what it controls for.

22. From thousands of people for which you have histories of smoking and cancer, you compare cancer rates in a randomly chosen subset of smokers to cancer rates in a randomly chosen subset of non-smokers.

(A) The comparison is experimental and controls for third variables between the two groups
(B) The comparison uses correlational data and controls for third variables between the two groups
(C) The comparison is experimental and does NOT control for third variables between the two groups
(D) The comparison uses correlational data and does NOT control for third variables between the two groups

23. You compare smoking rates between people who get cancer with those who don't get cancer

(A) The comparison is experimental and controls for third variables between the two groups
(B) The comparison uses correlational data and controls for third variables between the two groups
(C) The comparison is experimental and does NOT control for third variables between the two groups
(D) The comparison uses correlational data and does NOT control for third variables between the two groups

24. From people for which you have histories of smoking and cancer AND information on lifestyles, gender, and age, compare cancer rates between smokers and non-smokers when controlling for all recorded lifestyle properties, gender and age.

(A) The comparison is experimental and controls for some but not necessarily all possible third variables between the two groups
(B) The comparison is experimental and controls for all possible third variables between the two groups.
(C) The comparison uses correlational data and controls for some but not all possible third variables between the two groups.
(D) The comparison uses correlational data and controls for all possible third variables between the two groups

25-27 (3 pts). We want to test whether a person's response to horoscopes reflects accuracy of the description. The design is to legitimately generate all 12 horoscopes (for the 12 zodiac signs), then randomly assign horoscopes to 2,000 people. The randomization will assign an inappropriate horoscope to most people, but by chance, 8% will receive the right horoscope for their astrological sign. To keep the subjects from knowing what is being done, the subjects will be told that they have received a horoscope specific for their astrological sign. Each subject then scores the accuracy of the horoscope, and the data are recorded. **(A) = True (B) = false**

25. (A)(B) This design constitutes an experiment because it changes the way horoscopes are normally administered.
26. (A)(B) The design includes blind because the subjects do not know about the manipulation.
27. (A)(B) Controls would be absent because everyone is randomly assigned a horoscope.

28-30 (3 pts). What are major advantages of (well designed) experiments over correlational data? That is, why are experimental data so highly regarded?

28. (A)(B) There is no time constraint on when experimental data can be gathered. Even if we have just thought of the model we want to test, we can use pre-existing data for our experiment.
29. (A)(B) You can always do the type of experiment you need to answer the question.
30. (A)(B) Experimental data can often control for hidden variables that cannot knowingly be controlled in correlational data.

Psychics (rely on the videos)

31-33 (3 pts). What was the manipulation that makes the horoscope 'study' shown in the video an experiment?
(A) = True (B) = false

31. (A)(B) An entire class of students was used.
32. (A)(B) The horoscopes were deliberately done differently than normal to test a model.
33. (A)(B) The design included replication and had an explicit protocol.

34 (1 pt). The horoscope study shown was set up as a contrast to the way horoscopes are usually done -- individualized. When considering the **study shown in the video as the treatment** and the way **horoscopes are usually done as the control**, which of the following are correct interpretations of treatment and controlled variables across these two ways of delivering horoscopes?

(A) The expectation of personalized accuracy by the subjects (students) is a treatment variable.
(B) The expectation of personalized accuracy by the subjects (students) is a controlled variable.
(C) The development of personalized versus uniform horoscopes is a treatment variable.
(D) The development of personalized versus uniform horoscopes is a controlled variable.

35 (1 pt) In the segment on the Moscow (Russia) psychics, what can be said about the kind of hypothesis that was being tested (the kind of hypothesis that could be rejected)?

(A) Psychic phenomena have no 'predicative' or 'descriptive' ability
(B) Psychic phenomena are no better at prediction/description than what might be expected from some kind of generic prediction/description.

Facilitated Communication or FC (rely on the video)

36-39 (4pts) The reason(s) that the tests of FC shown constitute experiments is (are): **(A) = True (B) = false**

36. (A)(B). The tests involved the design features of blind, replication and explicit protocol.
37. (A)(B). The tests changed the FC environment in a specific way to test a model
38. (A)(B). There was a social need to resolve whether FC represented legitimate communication for autism.
39. (A)(B). The tests were observed by third parties.

40 (1 pt) The tests of Facilitated Communication shown included controls: why or why not?

(A) True: controls were the cases of different facilitators used with the same 'child.'
(B) True: controls were the cases in which the same photo was shown to both child and facilitator
(C) False: controls would have constituted letting the child hold the arm of the facilitator
(D) False: from what was shown, we have no way of knowing whether controls were included.

41-44 (4 pts) How was 'blind' critical to the tests of FC shown?

(A) True (B) False

41. (A)(B) Blind was needed to ensure that the facilitator did not know what the child was seeing and vice versa
42. (A)(B) Blind was needed to ensure that facilitator did not know he/she was being tested
43 (A)(B) Blind was needed to ensure that child did not know he/she was being tested
44. (A)(B) Blind was needed to avoid observer bias, whereby the person scoring the results would not know who typed which answers

45-47 (3 pts) What specific hypotheses were being tested by the FC experiments shown (as clearly explained in the video)? Choose all that apply, but do not assume that any apply. **A = true, B = false**

The tests were designed to determine:

45. (A)(B) Whether the children were able to comprehend the nature of their allegations.
46. (A)(B) Whether the typed words were being controlled by the facilitator or the child.
47. (A)(B) Whether the facilitators knew they were controlling the typing.