

## Philosophy 12: Introduction to Causal Reasoning

### Answers to study questions for Lecture 2: “Variable Causation”

1. Answer(s): (d)

We can pick any set of variables we like. Usually, that set will include all of the potential causal factors we know about, but not always. If we get lucky, that set will include all of the actual causal factors, but this rarely happens.

2. Answer(s): (a), (b), (c), (f)

Choices (d) and (e) are incorrect because, although it is *possible* that these might be causal factors (i.e., if tall buildings had a psychological effect on people which made them feel better about the economy, so that they were more willing to give), it is extremely unlikely.

3. Answer(s): (c)

There are nine, since each value of INCOME may be paired with one of the three values of EDUCATION.

4. Answer(s): (b)

We identify something as “the” cause relative to a set of other conditions and events (recall the discussion in the notes as to whether hitting the iceberg was “the” cause of the Titanic sinking). There is almost never (and probably not in this case either) a *sole* cause.

5. Answer(s): (b)

Unless the set of jointly sufficient causal factors is a *minimal* jointly sufficient set of causal factors, any factor can be included in the jointly sufficient set without really being a causal factor. (This is why the INUS criterion requires that the jointly sufficient sets be minimal.) To see this, suppose that the following sets of conditions were sufficient for bringing about Jeff’s death in this case:

**Set 1** Being sprayed with insecticide, having a parasite, being exposed to temperatures below 40 degrees F.

**Set 2** Not being sprayed with insecticide, having a parasite, being exposed to temperatures below 40 degrees F.

In this case, the insecticide would be a member of a set of sufficient causal conditions but it would appear not to be a cause of fly death since Jeff dies regardless of the value of that variable. This is much like the malaria example with the causal factor DRINKS GIN AND TONICS.

6. Answer(s): (a)

This is exactly what the company would be interested in. Even though it’s complicated to say, this is what they want to know: Given a set of background conditions that doesn’t, by itself, cause Jeff’s death, would the *addition* of the insecticide bring about Jeff’s death? If, in this circumstance, the insecticide had to be present for Jeff to die, then it would be a necessary member of a jointly sufficient set of causal conditions.

7. Answer(s): (a)

It is likely because cars are manufactured on assembly lines, so they are generally all built the same way. Assuming that they were all built in the same way, you can expect to see the same results for each possible causal assignment.

8. Answer(s): (b)

Like all cars, their upholstery comes in different materials: leather, vinyl, and cloth, and these materials deteriorate and crack at different rates. This means that they have different response structures with respect to the sun causing their upholstery to crack.