ANSWER: SHOVE IT IN AGAIN

The answer is: c. We just considered a question like this (SHOVE IT IN), and the answer was that the light gets dimmer. Now you SHOVE IT IN AGAIN and we say the brightness of the light is not affected. What cooks here?

What cooks is that for SHOVE IT IN the power supply was alternating current, 60 cycle AC. The power supply for SHOVE IT IN AGAIN is a battery and a battery puts out direct current, DC. Direct current will not produce a CHANGING magnetic field and the changing magnetic field is essential for the voltage drop in the coil.

So shoving the iron in has absolutely no effect on the light? Not quite. As the iron first goes in it gets magnetized and that takes some energy so the light momentarily dims and when you pull the iron out the light momentarily brightens, but these changes occur ONLY while the iron is moving. The light is not affected *after the iron is in the coil.* A non-moving iron core has no effect on the brightness of the light.

Incidentally, you don't really have to shove it in. The iron is "sucked" in. Why? Loosely speaking, the coil is an electromagnet and magnets "love" iron.