

Solutions Manual

The Spacetime Frontier
Science and Society in the 21st Century

by

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Master Planned Review



True or False

1. F Don't make assumptions!
2. F No one escaped the gun battle.
3. T
4. T
5. F Real plants give off oxygen, which is good for humans.

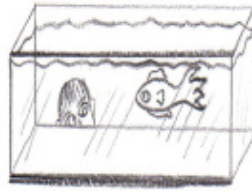
Multiple Choice

1. C Based on the information given, this is the best answer.
2. D
3. D
4. C Nylon is a thermoplastic polymer.
5. C The whole idea that strangers were present made the situation remarkable.

Short Answer

1. In a parallel hybrid, batteries power the electric motor. In a series hybrid, the gas engine powers the electric motor.
2. People tend to feel safe in numbers. Therefore, safety would be the greatest benefit.
3. Sound travels in Earth's atmosphere at 1200 feet per second, regardless of how loud the sound is.
4. Entropy means disorder. The 2nd Law of Thermodynamics says entropy increases spontaneously. The Master Planned neighbors were resisting the 2nd Law.
5. Constant exposure to a stimulus causes numbness. If our society can decrease exposure to violent acts, we might not be so desensitized. Turn off the TV!

PC Me Review



True or False

1. F They bought Martin a stable career.
2. T
3. T
4. T
5. T It's called cognitive engineering.

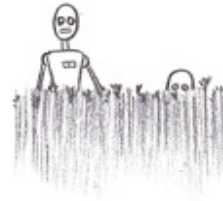
Multiple Choice

1. D
2. D The human body runs on chemical electrical energy.
3. A Also known as Teflon.
4. D
5. B

Short Answer

1. There are more similarities than differences. Both approaches attempt to create superior organisms.
2. Your personality is influenced by your genetics and your environment.
3. I would get an acoustic guitar implant.
4. The rich would get richer, and the poor would get poorer.
5. Martin is a good case study because his father already has an implant. The BioBrain Corporation could examine whether or not implants, contaminated or not, are affected by genetics.

Short Circuit Review



True or False

1. F Alpha suffered temporary sensory overload.
2. T
3. T
4. F Beta was impressed. Alpha was in pieces.
5. F The lieutenant didn't like robots, period!

Multiple Choice

1. B
2. A As of 2009, it is in Russia.
3. A
4. C This is energy that can be converted to other forms of energy.
5. C A robot with an old CPU would be comparable to a human having lesser intelligence.

Short Answer

1. Robots could save human lives. Reliance on too many robots could result in an unexpected and catastrophic full-system failure.
2. $\text{Speed} = \text{distance} / \text{time}$ *or* $d = st$ so 1200 feet per second x 3 seconds = 3600 feet.
3. Free-thinking artificial intelligence = trouble.
4. Sending robots into space is easier than sending humans because robots don't require food, water, and artificial life-support equipment. A rocket filled with robots weighs less and is much smaller.
5. Oxygen and a fuel. Cells use glucose as the fuel.