

Physics 104 - Multiple Choice Questions
Ch 12 - The Laws of Thermodynamics

1. A heat engine: A) converts heat input to an equivalent amount of work B) converts work to an equivalent amount of heat C) takes heat in, does work, and loses energy heat D) uses positive work done on the system to transfer heat from a low temperature reservoir to a high temperature reservoir E) uses positive work done on the system to transfer heat from a high temperature reservoir to a low temperature reservoir
2. A heat engine that in each cycle does positive work and loses energy as heat, with no heat energy input, would violate: A) the zeroth law of thermodynamics B) the first law of thermodynamics C) the second law of thermodynamics D) the third law of thermodynamics E) Newton's second law
3. A Carnot cycle: A) is bounded by two isotherms and two adiabats on a p - V graph B) consists of two isothermal and two constant volume processes C) is any four sided process on a p - V graph D) only exists for an ideal gas E) has an efficiency equal to the enclosed area on a p - V diagram
4. A Carnot engine operates between 200°C and 20°C . Its maximum possible efficiency is: A) 90% B) 100% C) 38% D) 72% E) 24%
5. Which of the following is NOT a state variable? A) Work B) Internal energy C) Entropy D) Temperature E) Pressure

Answer Key

1. C
2. B
3. A
4. C
5. A