4.1. Introduction

4.1a If everything is at the same temperature, the possibility of extracting energy from a battery and dissipating energy into the contacts is forbidden by
   (a) the law of conservation of energy
   (b) the second law of thermodynamics
   (c) the non-zero resistance associated with ballistic conductors
   (d) law of conservation of charge
   (e) none of the above, the process is NOT forbidden

4.1b If everything is at the same temperature, the possibility of extracting energy from the contacts and charging up a battery is forbidden by
   (a) the law of conservation of energy
   (b) the second law of thermodynamics
   (c) the non-zero resistance associated with ballistic conductors
   (d) law of conservation of charge
   (e) none of the above, the process is NOT forbidden